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BUREAU OF COMMERCIAL FISHERIES
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COMMERCIAL FISHERIES REVIEW

A review of developments and news of the fishery industries prepared in the BUREAU OF COMMERCIAL FISHERIES.

Joseph Pileggi, Editor
H. M. Bearse, Assistant Editor

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COVER: During October 19-25, 1959, the Fishing Industry makes its usual annual all-out effort to promote the sale and use of fish and shellfish products. The objective is to increase the over-all and per capita consumption of fishery products in the United States. All segments of the fishing and allied industries and Government are cooperating in the promotion campaign.

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COMMERCIAL FISHERIES REVIEW

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CONSTRUCTION AND CATCH SELECTIVITY OF ALBACORE GILL NETS USED IN THE CENTRAL NORTH PACIFIC

By Joseph J. Graham* and Herbert J. Mann**

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Introduction 1
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INTRODUCTION

A comprehensive study of the resources of the albacore tuna, Germo alalunga (Bonnaterre), north and northeast of the Hawaiian Island chain under Public Laws 329 and 466 (the latter known as the Saltonstall-Kennedy Act) has been made by the Pacific Oceanic Fisheries Investigations (POFI) of the U. S. Bureau of Commercial Fisheries. One of the important objectives of the study has been to uncover concentrations of albacore of commercial magnitude. It is likely such a concentration was brought to light by cruises in 1955 and 1956 (fig. 1).

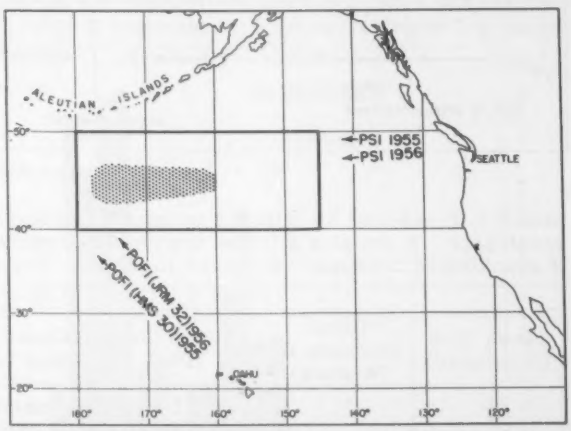

Fig. 1 - Outline of the general region surveyed during 1955 and 1956 by Pacific Oceanic Fishery Investigations and Pacific Salmon Investigations. The area of albacore concentrations is shaded.

The principal gear that made this discovery possible was the gill net, and events leading up to its use by POFI in the North Pacific began in 1955. During the summer of that year, the POFI research vessel Hugh M. Smith (cruise 30) surveyed the central North Pacific (fig. 1) with vessels of Pacific Salmon Investigations (PSI) of the U. S. Fish and Wildlife Service (Powell and Peterson 1957). The Hugh M. Smith conducted hydrographic stations while determining the distribution and abundance of albacore tuna with trolling gear. The PSI vessels attempted to delineate the distribution of high-seas salmon by gill-netting at night. Catches of albacore on the trolling gear were mediocre. However, albacore were taken in the salmon gill nets at the more southern stations (48° N.-45° N.) of the PSI vessels. A few of those catches were impressive, particularly since most of the fish were not gilled, but entangled in the small-meshed salmon nets[1/]. The following year, during the same period and in the same area, the POFI research vessel John R. Manning made a fishing survey (cruise 32) in cooperation with PSI. Gill-netting was extended farther south (43° N.) by POFI where a greater abundance of albacore was anticipated and larger mesh sizes more suitable for albacore were used. Again albacore were found concentrated in about the same area, and were taken in that vessel's gill nets in near-commercial quantities.

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1/ Personal communication to Director, POFI, Honolulu, T. H., from Chief, Pacific Salmon Investigations, Seattle, Wash., September 20, 1955.

TYPE OF GEAR USED

The gill nets fished by POFI were of a design currently in use in the salmon fishery of the northwest coast of America. In addition, trammel nets designed specifically by POFI gear specialists for albacore fishing were utilized. The construction details of both types of nets are shown in figure 2. A unit of gear, the

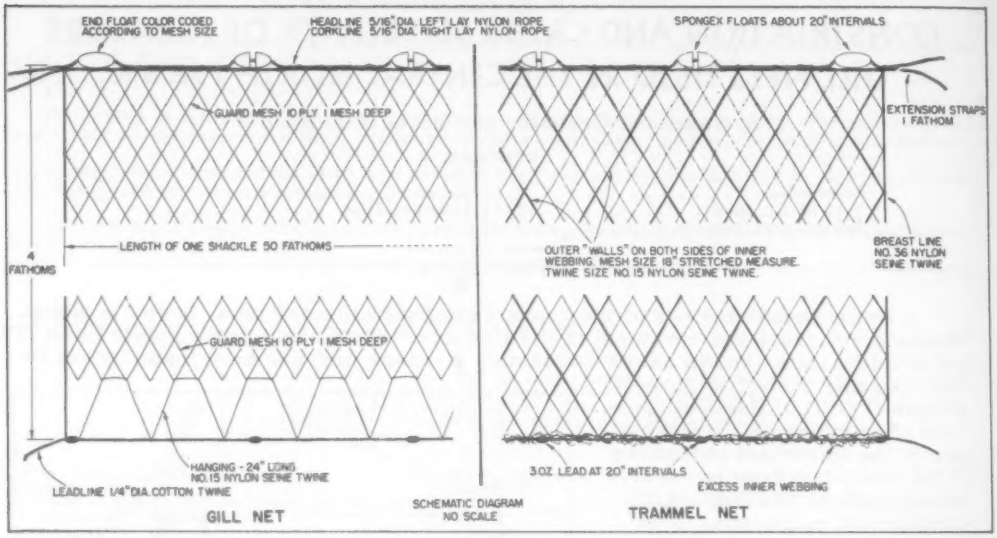
END FLOAT COLOR CODED ACCORDING TO MESH SIZE
HEADLINE 5/16" DIA. LEFT LAY NYLON ROPE
CORKLINE 5/16" DIA. RIGHT LAY NYLON ROPE
GUARD MESH 10 PLY 1 MESH DEEP
LENGTH OF ONE SHACKLE 50 FATHOMS
4 FATHOMS
HANGING - 24" LONG NO.15 NYLON SEINE TWINE
LEADLINE 1/4" DIA. COTTON TWINE
GILL NET
SPONGEX FLOATS ABOUT 20" INTERVALS
EXTENSION STRAPS 1 FATHOM
OUTER "WALLS" ON BOTH SIDES OF INNER WEBBING. MESH SIZE 18" STRETCHED MEASURE. TWINE SIZE NO. 15 NYLON SEINE TWINE.
BREAST LINE NO. 36 NYLON SEINE TWINE
3 OZ. LEAD AT 20" INTERVALS
EXCESS INNER WEBBING
TRAMMEL NET
SCHEMATIC DIAGRAM NO SCALE

Fig. 2 - Construction details of POFI albacore nets.

shackle, measured 50 fathoms in length and about 4 fathoms in depth regardless of mesh size. A set at a gill-net station was composed of 12 shackles of gill net and 2 shackles of trammel net joined together. The mesh sizes of the gill-net shackles

Table 1 - Gill-Net Specifications

Mesh Size (Stretched)	Depth (Number of Meshes)	Twine Size (Ply)	Guard Mesh (Size and Ply)	Type Hanging (Leadline)
$4\frac{1}{2}$	71	5	1 mesh-10 ply, 1 mesh-8 ply	2 mesh/hanging, skip 1
$5\frac{1}{2}$"	59	5	"	"
$6\frac{1}{2}$"	51	6	"	"
$7\frac{1}{2}$"	45	8	"	2 mesh/hanging, skip 0

were $4\frac{1}{2}$ inches, $5\frac{1}{2}$ inches, $6\frac{1}{2}$ inches, and $7\frac{1}{2}$ inches (stretched mesh). Construction details of the gill-net and trammel-net shackles are summarized in tables 1 and 2, respectively. Nets were hung in a conventional manner with the webbing 50 percent

Table 2 - Trammel-Net Specifications

Inner Net			Outer Net		
Mesh Size (Stretched)	Depth (Number of Meshes)	Twine Size (Ply)	Mesh Size (Stretched)	Depth (Number of Meshes)	Twine Size (Number)
$4\frac{1}{2}$"	124	5	18"	20	15
$6\frac{1}{2}$"	86	6	19"	19	15

on the corkline so that 100 fathoms of netting (stretched mesh) were hung on 50 fathoms of corkline. Trammel nets differed from the gill nets in the addition of large-mesh outer "walls," which enclosed the inner webbing. These outer walls of webbing were evenly spaced opposite to each other to allow fish to push the inner webbing through the walls and thus pocket themselves.

Except for the leadline, the nets were made of nylon, and dyed green or grey-green to make them less conspicuous in the water. The webbing was constructed of bonded double-knotted salmon twine, headlines and corklines of 3-strand spun rope, and breastlines, seizings, and hangings of spun twine.

SELECTIVITY OF MESH SIZE

The manner in which albacore were captured during the summer cruise of the John R. Manning was not the same for the various meshes of a set. Smaller meshes of the gill nets captured fish more by entangling than gilling and the trammel meshes captured entirely by entangling rather than pocketing. When a set of nets was retrieved, the tension placed on the shackle coming aboard was sufficient to disentangle the fish and those not properly gilled sometimes fell out of the net before reaching the vessel. Table 3 indicates that more fish were lost from the smaller meshes than from the nets of larger meshes during retrieving. The absence of fish loss from the trammel mesh probably attests to the entangling efficiency of its multiple meshes.

Table 3 - The Number of Fish Lost per Mesh Size of Gill Net as the Retrieved Gear Neared the Vessel
(The figures in parentheses give the loss per shackle.)

Mesh	$4\frac{1}{2}$"	$5\frac{1}{2}$"	$6\frac{1}{2}$"	$7\frac{1}{2}$"
Number Lost.	7(0.21)	11(0.25)	5(0.09)	1(0.03)

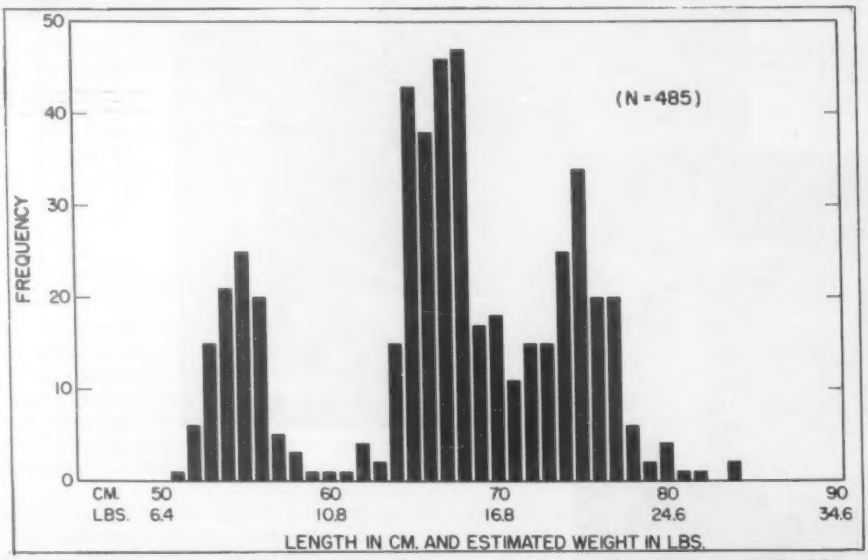

Fig. 3 - Length frequencies and estimated weight of albacore tuna taken in gill nets during cruise 32 of the research vessel John R. Manning.

Three size groups of albacore covering a size range of 51 cm. (20 inches) to 84 cm. (33 inches) fork length (fig. 3) were sampled by the gill nets of the John R. Manning. Table 4 shows that over this size range a progressive shift toward larger

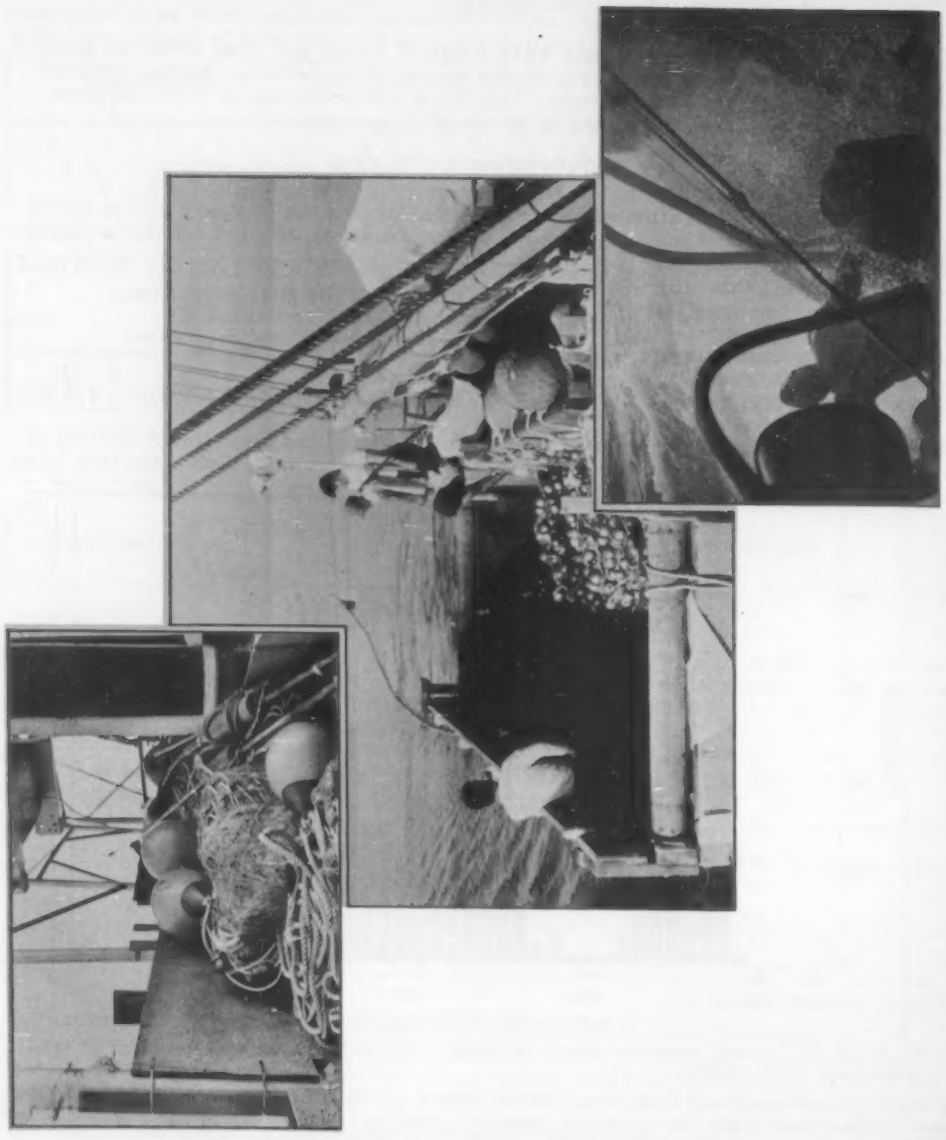

Fig. 4 - Upper left panel: Gill nets stacked in the bins of the charter vessel Paragon. Middle panel: Laying gill nets, John R. Manning. Bottom panel: Retrieving gill nets in the North Pacific, John R. Manning.

fish accompanied an increase in mesh sizes from $5\frac{1}{2}$ inches to $7\frac{1}{2}$ inches. This shift was so great in the case of the largest mesh that the small size group (51-60 cm. or 20-23 inches) was almost missing from the catch. In contrast, the smallest mesh ($4\frac{1}{2}$ inches) captured fish from all three size groups sampled (51-60 cm. or 20-23 inches, 61-70 cm. or 24-28 inches, and 71-80 cm. or 28-31 inches) and small fish were not emphasized in the catch. As in the case of the trammel nets it appeared that the $4\frac{1}{2}$-inch mesh captured albacore entirely by entangling.

Table 4 - Length Frequency of Albacore per Mesh Size

Shackel	Fork Length in cm.																																	Totals
	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	
$4\frac{1}{2}$	-	-	1	3	2	6	-	-	-	1	-	-	-	2	5	8	4	3	4	-	1	-	1	3	3	5	3	1	-	-	-	-	-	1	57
$5\frac{1}{2}$	-	6	10	8	7	4	2	1	-	-	-	1	1	2	5	-	6	8	3	2	2	2	1	4	5	-	3	-	-	-	-	-	-	-	83
$6\frac{1}{2}$	1	-	2	9	14	6	3	2	-	-	1	3	-	7	19	18	21	16	6	11	6	4	4	4	12	6	4	1	-	2	-	-	-	-	182
$7\frac{1}{2}$	-	-	-	-	1	-	-	-	-	-	-	-	1	3	10	8	12	19	3	5	2	6	7	5	8	5	8	3	2	2	-	-	-	1	111
Trammel	-	-	2	1	1	4	-	-	1	-	-	-	-	1	3	4	3	1	1	-	-	3	2	7	5	4	2	1	-	-	1	-	-	-	47
Totals	1	6	15	21	25	20	5	3	1	1	1	4	2	15	42	38	46	47	17	18	11	15	15	23	33	20	20	6	2	4	1	-	-	2	480

The progressive shift in fish size with increase in mesh size and the ability of the larger meshes to gill rather than entangle affect the commercial potentialities of the individual meshes. Of the meshes fished, the $7\frac{1}{2}$ inch stands far above the others in efficiency in catch when measured both by numbers and by weight of fish caught per shackle (table 5). This efficiency is further emphasized in that average

Table 5 - Catch per Mesh Size Within the Area of Abundance (42°-46° N., 175°-155° W.) (Figures in Parentheses were Determined from the Four Largest Catches[1/])

Mesh Size (Stretched Measure)	Albacore		Weight in Pounds			Percentage of Albacore Above 10 Lbs.	No. of Sharks	
	Total Number	Number Per Shackle	Total	Per Shackle	Avg. Fish		Total	Per Shackle
$4\frac{1}{2}$"	(35) 57	(4.4) 2.0	855	(61) 30	$15\frac{1}{2}$"	79	57	1.9
$5\frac{1}{2}$"	(48) 84	(4.8) 2.2	1,054	(56) 28	$12\frac{1}{2}$"	54	57	1.4
$6\frac{1}{2}$"	(105) 186	(8.0) 3.7	2,642	(110) 56	$14\frac{1}{2}$"	80	56	1.1
$7\frac{1}{2}$"	(78) 118	(9.8) 4.2	1,929	(172) 69	$17\frac{1}{2}$"	99	22	0.7
Trammel	(25) 47	(5.0) 2.8	773	(78) 45	$16\frac{1}{2}$"	80	28	1.6

1/ Included in all figures is the catch for a set which took 10 albacore, but had a soaking time of only $2\frac{1}{2}$ hours.

fish size is greater for this mesh and almost all fish taken exceeded 10 pounds. Below this size albacore are often not acceptable to canners. Another attractive feature of the larger mesh is a lower shark catch per shackle, for while shark damage to albacore during the cruise was negligible, their removal from the nets required time and resulted in broken meshes. Presumably, the larger mesh of the $7\frac{1}{2}$-inch net permitted the slender form of the great blue Prionace glauca (Linnaeus)--the most abundant shark--to pass through rather than gill in the net.

On the basis of the above data, it is not possible to establish what mesh size would be best for fishing albacore commercially with gill nets in the central North Pacific, since our most efficient mesh was also the largest used. Powell et al (1952) captured albacore of the same size range in the eastern North Pacific using gill nets with mesh sizes of $7\frac{1}{2}$ inches, $8\frac{1}{2}$ inches, and $9\frac{1}{2}$ inches. His data showed that the $7\frac{1}{2}$-inch and $8\frac{1}{2}$-inch meshes fished with about the same success but the $9\frac{1}{2}$-inch mesh experienced a considerable decrease in catch. From Powell's and our own observations we conclude that the most efficient mesh size with respect to commercial gain would lie between $7\frac{1}{2}$ inches and $8\frac{1}{2}$ inches.

As the gill net was retrieved aboard the John R. Manning, an observer recorded the depth of each albacore in the net by arbitrarily dividing the total depth of the

net (by sight) into thirds. A summary of these observations showed that during the cruise, 41 percent of the catch was taken in the upper third of the net, 35 percent in the middle, and 24 percent in the lower third. Thus, most of the fish were captured near the top of the net, but the one quarter near the bottom would suggest that if the net had been deeper, more fish might have been taken. Powell et al (1952) also recorded the depth distribution of fish in their nets and found that the majority of the albacore were taken near the surface between 1 and 3 fathoms in depth, that is, within the depth (4 fathoms) of the POFI nets. However, several fish were captured near the leadline and it is possible that in some instances the 100-mesh nets, which are about twice the depth of the POFI nets, did not fish the entire vertical distribution of albacore. The depth of net from which the greatest commercial advantage could be realized cannot be ascertained from the above data since such factors as cost of netting, ease of retrieving, net storage area aboard the vessel, etc., must be considered. Without such considerations, a compromise between the gears used by Powell and POFI or 75 meshes would not seem unreasonable.

SUMMARY

If we consider our data comparable with that of Powell, the most productive net with which to fish albacore commercially in the central North Pacific would have a mesh size between $7\frac{1}{2}$ inches and $8\frac{1}{2}$ inches and a depth of 75 meshes.

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LITHUANIAN FISHERMEN TESTING ELECTRICAL FISHING IN BALTIC

Lithuanian fishermen are testing an electrical fishing method in the Baltic in which fish are caught by electrifying patches of water. Special electrodes connected to a generator aboard the fishing vessel are lowered into the water. When current flows between them, fish within several dozen yards of the anode are attracted towards it and when sufficient fish have congregated, they are pumped by a powerful pump to the deck of the vessel. Only bigger fish are attracted and one such installation is stated to be able to service 7 trawlers at the same time (Fisheries Newsletter, July 1958).

NUTRITIONAL VALUES OF FISH-MEAL PROTEINS AND THEIR RELATION TO PROCESSING VARIABLES

By C. R. Grau,* Neva L. Karrick,**
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ABSTRACT

More than 100 commercial and experimental fish meals were evaluated as sole sources of amino acids in chick diets in an attempt to determine what variables, if any, influence the protein quality of fish meal. It was found that the quality is influenced by the temperature of drying and possibly by storage conditions of the meal and by moisture-plus-oil content of the meal.

INTRODUCTION

Many attempts have been made to relate quality of protein to variation in processing methods in the manufacture of fish meal. It is generally thought that spoilage, extremely high temperatures, or long times of drying and other similar treatments reduced quality. That no simple relationships are involved, however, is clear from the extensive older literature and from a recent survey (Grau and Williams 1955).

The purpose of the present study therefore was to attempt to discover what processing variables, if any, are related to the nutritional value of the protein in fish meal.

PROCEDURE

The general approach to the problem was to study meals produced from one species of fish during one year, note processing variables of possible significance, determine composition of meals, estimate protein quality of the meals by measurement of the growth of chicks, and then study the data to see if there was correlation between the processing variables and quality.

The data taken included the following: date of capture of fish, condition of raw material, method of drying the press cake, type of meal produced, when sample was taken, and proximate composition of the meal. The effects of time and temperature of storage on the nutritive value of the meals also were studied.

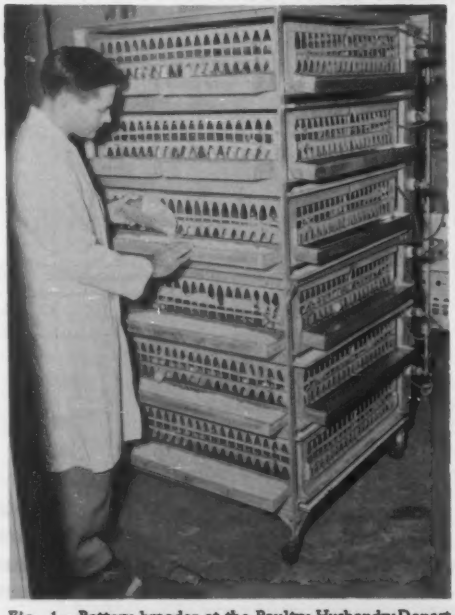

Fig. 1 - Battery brooder at the Poultry Husbandry Department, University of California. Chicks are being raised prior to feeding an experimental diet to study protein quality of fish meals.

MEAL SAMPLES: The fish meals used in the present work were obtained by the U. S. Bureau of Commercial Fisheries largely from commercial plants located along the Atlantic Coast and the Gulf of Mexico. Most of the meals were made from whole menhaden (Brevoortia tyrannus), but two samples of haddock (Melanogrammus aeglefinus) fillet waste and two of rosefish (Sebastodes marinus) fillet waste from

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New England also were included. Nearly all of the meals were from regular commercial sources, but a few (X-series) were produced experimentally in equipment of pilot-plant size that had been leased by the Bureau.

Table 1 - Composition of the Diets

Component	Level in Diet
	Percent
Mineral, choline, and glucose mixture (see below)	10
Vitamin mixture (see below)	6
Soybean oil, crude	5
Protein[1/], crude, from fish meal	20
Glucose, to a total of	100
Mineral, choline, and glucose mixture:	
Calcium phosphate, dibasic	3.30
Calcium carbonate	1.92
Magnesium sulfate · 7 H_2O	0.6
Potassium chloride	0.6
Sodium chloride (iodized)	0.5
Sodium silicate · 9 H_2O	0.2
Aluminum sulfate · 18 H_2O	0.1
Ferric citrate	0.074
Manganous sulfate · H_2O	0.03
Zinc sulfate · 7 H_2O	0.0063
Copper sulfate (anhydrous)	0.005
Cobaltous acetate · 4 H_2O	0.002
Choline chloride	0.20
Glucose to make a total of	10.00
Vitamin mixture:	
Vitamin A premix (1,000 IU per gram)	0.1
Vitamin D premix (1,500 ICU per gram)	0.1
Vitamin E premix (1 mg. per gram) (440 IU per gram)	0.1
Nicotinic acid	0.006
Calcium (d) pantothenate	0.003
Thiamine HCl	0.001
Riboflavin	0.001
Pyridoxin HCl	0.001
Folic acid	0.001
Menadione	0.001
Biotin	0.00001
Vitamin B_{12}	0.0000022
Glucose to make a total of	6.00

1/ The level of fish meal used is determined by the crude protein (N x 6.25) content; thus, if the meal contained 60 percent protein, the level of meal would be $\frac{20 \times 100}{60} = 33.3$ percent.

DETERMINATION OF PROTEIN QUALITY: A number of different methods of estimating the quality of protein have been developed; the method of choice for any particular product depends on the use to which the data are to be put (Grau and Carroll 1958). In earlier studies of fish meals (Grau and Williams 1955), a protein source supplied all the amino acids in a diet that otherwise was composed of purified materials. In this method, all nutrients except amino acids are contained in the basal diet. This method has the advantage that it yields rapid results and indicates deficiencies or imbalances of amino acids, but it has the disadvantages of not differentiating among meals that supply various amounts of amino acids above the required levels and of rating as poor those proteins that may be deficient in one or two amino acids but that could supply amino acids needed to supplement other proteins. A more accurate measure of quality could be obtained by estimating the amount of each amino acid that is available to the animal from a particular source of protein. Such a measure now is being developed, but work on it had not been started when this investigation was undertaken; hence the more general method of assessing quality was employed.

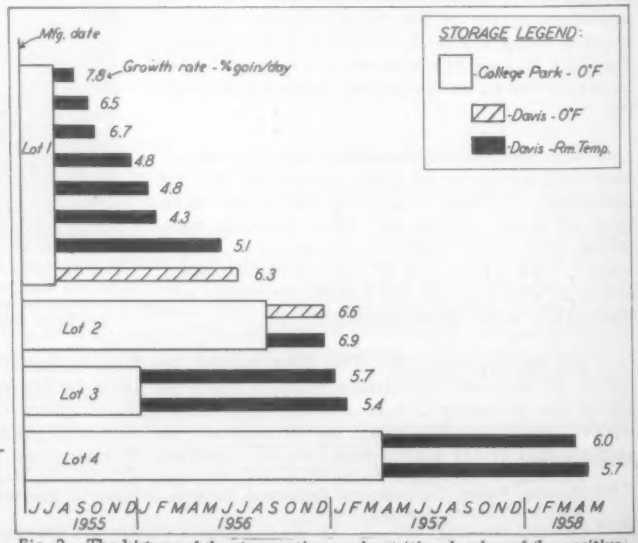

Fig. 2 - The history of the storage time and nutritional value of the positive control menhaden meal, GG1-3A65.

The chick-growth method used to determine quality of protein in the fish meals was as follows: Newly hatched white leghorn chicks were fed a commercial-type starter mash for 11 days, and then the heaviest and lightest birds (about 10 percent) were discarded. The remaining birds were placed at random into converted rat cages that housed four birds each. Four such

Table 2 - Data on Samples

Code[1]	Catch Date[2]	Condition of Raw Material[3]	Drying Method[4]	Meal Type[5]	Samples Taken[6]	Protein	Oil	Ash	Moisture	Growth Rate
						(Percent)				Percent Gain Per Day
EBA (haddock)	1953-54	G+	HA	-	-	59.3	4.9	26.0	7.9	7.8
GG2-2B75	7/13	G	D	FS	-	61.2	8.9	20.5	7.4	7.6
EBB (haddock)	1953-54	G+	-	-	-	53.3	18.9	20.9	7.3	7.5
GG3-3D75	7.7	G	S	FS	-	63.3	9.4	18.5	9.0	7.5
GG1-1B75	7/13	G	S	FS	FC	65.4	11.8	17.0	6.1	7.5
GG5-1B75	7/13	G	S	CS	EG	65.6	12.1	16.8	5.2	7.4
GG1-6C65	6/20	F	S	FS	FC	56.5	15.2	18.5	8.7	7.3
GH1 (rosefish)	6/21	G	HA	-	-	63.3	11.4	22.4	6.3	7.3
GG4-1B75	7/13	G	S	CM	BG	61.3	11.1	17.1	6.3	7.3
GG1-2B75	7/13	G	D	FS	-	65.8	10.6	18.7	6.4	7.3
GG2-1B75	7/13	G	S	FS	FC	66.5	10.6	18.3	4.7	7.1
GG8-2B75	7/13	G	D	CM	EG	62.5	10.4	19.3	6.7	7.1
GG11-3D115D	11/2	-	S	CS	-	64.9	9.6	18.4	6.6	7.1
CP70	1/8/54	-	HA	CM	-	58.3	6.5	23.2	9.5	7.0
GG7-3D85	8/30	-	S	FS	FC	63.2	7.9	18.1	10.8	7.0
CP50	8/6/52	-	HA	CM	-	59.5	6.1	21.2	8.2	6.9
GG4-2B75	7/13	G	D	CS	BG	62.6	10.7	18.4	7.3	6.9
GH3 (haddock)	9/28	G+	S	-	-	62.7	13.0	18.1	6.1	6.9
GG5-2B75	7/13	G	D	CM	BG	62.8	10.3	18.8	7.1	6.8
GG6-2B75	7/13	G	D	CD	EG	63.0	11.4	16.7	7.0	6.8
GG7-2B75	7/13	G	D	CS	EG	61.1	10.4	20.2	7.3	6.7
GH2 (rosefish)	9/15	-	HA	-	-	58.2	9.0	25.9	7.1	6.7
GG3-2B75	7/13	G	D	CD	BG	63.1	10.9	16.7	7.2	6.6
GG32-3A105	10/4	G	HA	CM	-	60.3	8.6	22.8	7.7	6.6
GG11-3D115B	11/2	-	S	CS	-	65.2	10.7	18.9	5.5	6.6
GGX23-105	10/18	G	D	FS	-	61.1	3.8	19.6	11.6	6.5
GG27-3A105	10/12	G	HA	FS	FC	58.5	6.8	24.8	8.7	6.4
GG11-3D115F	11/2	-	S	CS	-	64.3	9.8	19.1	6.4	6.4
GG11-3D115G	11/2	-	S	CS	-	64.5	10.3	16.2	8.6	6.4
CP71	10/26/54	G	S	FS	-	58.2	11.2	20.1	8.9	6.3
GG5-3D85	8/24	E	S	FS	FC	62.1	9.2	20.5	9.6	6.3
GG6-3D85	8/30	G	S	FS	H	63.6	9.2	17.5	11.6	6.3
GG9-3D105	10/18	F	S	CM	-	63.5	11.4	18.5	6.9	6.3
GGX24-105	10/18	G	D	FS	-	58.0	11.0	22.6	7.1	6.3
GG15-4D125	12/9	F	HA	FS	FC	60.2	8.6	22.3	7.4	6.3
CP73	6/16	-	HA	FS	-	58.4	9.8	21.6	8.0	6.2
GG3-3D85	8/24	E	S	FS	H	62.6	9.8	20.4	8.9	6.2
GG11-3A95	8/31	G	HA	FS	FC	54.5	9.8	23.5	9.5	6.2
GGX22-105	10/18	G	D	FS	-	57.5	9.7	23.4	7.9	6.2
GG33-3A105	10/20	G	HA	CM	-	61.1	8.4	21.5	8.9	6.2
GG13-3A95	8/31	G	HA	CM	-	59.2	9.5	21.4	10.3	6.1
GG20-3A95	9/27	G	HA	FS	FC	60.7	8.2	21.0	8.4	6.1
GG29-3A105	10/18	G	HA	FS	FC	58.7	8.4	23.4	9.0	6.1
GG31-3A105	10/20	G	HA	FS	FC	60.8	9.1	21.0	8.7	6.1
GG12-3A95	8/30	G	HA	CM	-	59.0	9.7	21.3	9.9	6.0
GG25-3A105	10/16	G	HA	FS	FC	60.4	7.8	23.2	7.8	6.0
GG4-3D85	8/24	E	S	FS	H	62.8	9.1	20.0	9.5	5.9
GG7-3A85	8/30	G	HA	FS	H	58.6	9.4	20.0	11.5	5.9
GG8-3A85	8/30	G	HA	FS	FC	61.2	10.3	20.3	9.7	5.9
GGX3-95	9/7	-	HA	FS	-	55.0	10.6	23.8	10.9	5.9
GG23-3A95	9/28	G	HA	CM	-	60.2	7.9	24.0	7.6	5.9
GGX27-105	10/20	G	D	FS	-	61.0	8.7	21.1	6.7	5.9
GG2-3D65	6/14	G	S	CM	-	60.7	11.5	21.2	6.5	5.8
GG9-3A85	8/31	G	HA	FS	H	61.3	9.3	18.6	10.5	5.8
GGX11-95	9/28	G	HA	FS	-	55.6	11.0	25.1	7.0	5.8
GG22-3A95	9/29	G	HA	FS	FC	61.0	7.9	22.0	8.6	5.8
GG26-3A105	10/11	G	HA	FS	FC	58.6	9.5	21.7	9.1	5.8
GG4-4D115	11/2	-	HA	FS	FC	62.0	9.6	20.3	6.5	5.8
GG1-3B85	8/31	G	HA	FS	H	59.4	9.4	18.5	12.7	5.7
GGX5-95	9/13	E	HA	FS	-	57.4	10.1	22.9	8.6	5.7
GG10-1B95	9/21	G	S	FS	FC	65.5	12.6	15.2	5.9	5.7
GGX12-95	9/29	G	HA	FS	-	59.7	9.3	21.7	8.7	5.7
GGX21-105	10/13	G	HA	FS	-	58.1	9.6	21.6	8.9	5.7
GG1-3C105	10/26	G	HA	CS	-	60.6	11.8	19.7	7.6	5.7
GG6-4D115	11/7	G	HA	FS	FC	62.7	13.4	14.7	7.6	5.7
GG10-3A85	8/31	G	HA	FS	H	62.2	9.3	17.5	10.5	5.6
GG3-3B85	8/31	G	HA	FS	FC	58.6	9.3	18.6	13.2	5.6
GG17-3A95	9/8	-	HA	CM	-	62.8	7.1	22.8	7.4	5.6
GGX18-105	10/11	G	HA	FS	-	59.3	14.0	18.6	7.1	5.6
GG24-3A105	10/4	G	HA	FS	FC	58.6	9.1	22.9	8.6	5.5
GG12-4D115	10/27	F	HA	CS	-	62.9	8.5	20.9	7.0	5.5
GG18-3A95	9/13	E	HA	FS	FC	61.1	9.4	21.6	7.2	5.4

Continued on next page.

Table 2 - Data on Samples (Contd.)

Code[1]	Catch Date[2]	Condition of Raw Material[3]	Drying Method[4]	Meal Type[5]	Samples Taken[6]	Protein	Oil	Ash	Moisture	Growth Rate
						(Percent)				Percent Gain Per Day
GG5-3A85	8/24	S	HA	FS	FC	53.6	11.1	24.9	10.2	5.3
GGX10-95	9/27	G	HA	FS	-	60.7	8.7	21.5	8.3	5.3
GG21-3A95	9/28	G	HA	FS	FC	59.2	7.9	24.8	7.9	5.3
GG30-3A105	10/18	G	HA	CM	-	61.3	9.9	19.8	8.3	5.3
GG10-3D105	10/26	G	S	FS	-	65.2	9.5	19.4	6.3	5.3
GG11-3D115	11/2	-	S	CS	-	65.3	9.6	19.2	5.5	5.3
GG5-4D115	11/2	-	HA	CS	-	62.2	10.2	19.8	6.9	5.3
GG8-3D95	8/30	G	S	CM	-	63.0	9.7	19.1	9.1	5.2
GG19-3A95	9/21	-	HA	FS	FC	62.0	9.1	20.4	7.4	5.2
GGX16-105	10/6	G	HA	FS	-	57.5	9.8	24.2	7.9	5.2
GG4-3A85	8/24	S	HA	FS	H	55.0	10.1	24.8	9.3	5.1
GG6-3A85	8/22	S	HA	CM	-	60.5	12.5	20.3	7.5	4.9
GGX6-95	9/14	G	HA	FS	-	59.1	8.5	21.9	8.7	4.9
GG4-3B95	8/31	G	HA	CM	-	59.3	11.3	19.8	11.2	4.8
GG16-3A95	9/7	-	HA	CM	-	62.6	7.3	21.8	7.7	4.7
GGX15-105	10/6	G	HA	FS	-	56.1	12.2	23.0	6.8	4.5
GG18-4D125	12/9	F	HA	CS	-	60.2	7.5	23.3	6.9	4.4
GGX19-105	10/12	G	HA	FS	-	54.7	11.4	25.1	7.8	4.3
GG13-4D115	11/7	G	HA	CM	-	62.9	13.4	14.8	7.2	4.3
GG14-4D115	11/9	-	HA	CM	-	64.3	13.0	14.7	6.4	4.3
GG19-4D125	11/16	E	HA	CM	-	62.9	11.7	17.1	6.5	4.2
GG28-3A105	10/14	G	HA	FS	FC	58.9	12.2	20.2	8.1	4.1
GG11-4D115	11/9	-	HA	FS	FC	65.0	13.5	14.7	5.5	4.1
GG3-3A85	8/24	S	HA	FS	H	53.6	12.3	27.0	8.6	3.9
GGX20-105	10/12	G	HA	FS	-	57.0	10.4	23.2	8.3	3.9
GGX14-105	10/4	G	HA	FS	-	55.2	16.2	22.1	6.1	3.4

1/ All meals processed from menhaden, unless noted otherwise.
2/ Catch date--all fish caught during 1955 unless marked otherwise.
3/ Condition of raw material--E - excellent, G - good, F - fresh, S - spoiled.
4/ Drying method--S - steam drier, HA - hot-air drier, D - dehydromat drier.
5/ Meal type--FS - fresh scrap, CS - cured scrap, CM - cured meal, CD - cured dust.
6/ Samples taken--FC - floor cooled two hours, H - hot, bagged immediately, BG - beginning of grinding, EG - end of grinding.

groups were randomized in racks in a room maintained at about 85° F. Twelve hours of artificial light was available each day.

The chicks were fed diets that contained the ingredients listed in table 1. The level of fish meal was adjusted to provide 20 percent crude protein to each diet. Feed and water always were available to the birds. The test period lasted 8 days, and the rate of growth was expressed as the percent gain per day. This value was calculated for each group by dividing the gain per day by the average of the initial and final weights and then multiplying by 100.

RESULTS AND DISCUSSION

The data for the chick-feeding tests are presented in table 2, together with proximate analyses and a condensed history of the fish-meal samples. The rate of growth varied from 7.8-percent gain per day for meals of highest quality down to 3.4-percent gain per day for those of lowest quality.

An examination of the data shows two trends. Both the drying method employed during manufacture of the meal and the composition of the meal affected its nutritive value.

The fish meals were prepared in driers of several types: in hot-air driers at high temperature and in steam driers and dehydromat driers at lower temperature.

In table 3, growth rates are tabulated according to the method of drying. All of the 15 meals that were of poor quality and resulted in low-growth rate were dried at high temperature, whereas 76 percent of the meals of good quality were dried at low

temperature. These results indicate that high-temperature drying is associated with decreasing quality of the meals. They also indicate, however, that meals of good quality can be prepared in high-temperature driers. Accordingly, there must be factors other than temperature that affect meal quality.

Table 3 - Comparison of Protein Quality as Measured by Growth Rate and of Temperature Used to Dry Meals

Growth Rate	Low Temperature		High Temperature	
Percent Gain per Day	No. of Meals	Percent	No. of Meals	Percent
6.5 to 7.8 (good)	19	76	6	24
5.1 to 6.4 (intermediate)	16	28	41	72
3.4 to 5.0 (poor)	0	0	15	100

Materials making up fish meals are liquids (moisture and oil) and solids (protein and ash). The content of moisture plus oil, which gives a measure of the liquid-type constituents, has been used in table 4 as a means of classifying the meals. A comparison of the meals in

Table 4 - Comparison of Protein Quality and of Amounts of Moisture-Plus-Oil Contents

Growth Rate	Moisture-Plus-Oil Ranges					
	12.0 to 16.9 Percent		17.0 to 18.9 Percent		19.0 to 26.9 Percent	
Percent Gain Per Day	No. of Meals	Percent	No. of Meals	Percent	No. of Meals	Percent
6.5 to 7.8 (good)	10	38	13	50	3	12
5.1 to 6.4 (intermediate)	17	30	23	40	17	30
3.4 to 5.0 (poor)	2	13	3	20	10	67

three categories of moisture-plus-oil content with the meal quality is shown in table 4. Meals low in moisture plus oil tend to fall in the group yielding good growth rate (38 percent in the good category as compared to only 13 percent in the poor category). Meals having high moisture plus oil tend to fall in the group yielding poor growth rate (67 percent in the poor-growth-rate group as compared to only 12 percent in the high-growth-rate group). There thus seems to be some correlation between the composition of the meal as measured by moisture plus oil and the growth rate.

A number of other possible correlations were investigated including those of growth rate with condition of raw material from which the meal was made, with protein content, with ash content, and with meal type, but no clear-cut trends could be found.

When the menhaden meals were manufactured, one carefully processed lot was set aside as a control. Samples of this meal (GG1-3A65) were kept at unregulated room temperature or at 0° F. in closed fiberboard drums until used for biological tests. The first tests, in which the meal was used as a positive control, revealed it to be an excellent source of protein. During the succeeding months, however, the quality decreased, as is shown in figure 1.

Table 5 - Effect of Storage on Protein Quality of Fish Meals

Code	Initial Value	Storage Time	Value After Storage	
	Percent Gain Per Day	Months	Percent Gain Per Day	
			0° F.	85° F.
GG2-2B75	7.6*	2*	6.7*	6.0*
GG1-1B75	7.5*	2*	7.1*	6.2*
GG3-3D75	7.5	7	6.9	6.2
GG5-1B75	7.4	7	5.9	5.9
GG4-1B75	7.3	7	6.7	5.3
GG1-6C65	7.3	7	6.1	6.7
GG1-2B75	7.3*	2*	6.7*	6.9*
GG2-1B75	7.1	7	6.9	6.4
GG8-2B75	7.1	7	7.0	5.2
CP70	7.0	7	6.7	7.0
GG4-2B75	6.9	7	6.8	5.3
GG6-2B75	6.8	7	7.0	5.9
GG5-2B75	6.8*	2*	6.6*	6.9*
GG7-2B75	6.7	7	7.1	6.1
GG3-2B75	6.6	7	5.3	5.1
CP71	6.3	7	6.1	5.9
CP73	6.2	7	5.7	5.5
Average	6.9	7*	6.5*	5.9*

*Two-months storage; omitted from average.

During the course of this research, four different lots of the standard menhaden meal (GG1-3A65) were used. The growth results with these four lots are shown in figure 2, together with data on time, temperature, and place of storage. Meals were not kept at 0° F. while being shipped from College Park, Md., to Davis, Calif. The results indicate that storage at unregulated room temperature was harmful to the first lot of meal. The other lots showed less adverse effect of storage, but those stored at room temperature were not as good as were those kept at 0° F. These data are only indicative, but they do suggest the advisability of testing further the effects of storage temperature on quality.

The possible adverse effects of storage on protein quality were studied directly by taking a series of meals that had been stored at 0° F. from the time of manufacture in June 1955 until June 1956, when the samples were divided. One-half of each sample was stored at 0° F.; and the second half, at a temperature of 85° F. Four of these pairs were fed after 2 months; the others, after 7 months. The growth results, which are presented in table 5, show that although some of the meals deteriorated at the elevated temperature, others either were not changed in value or, even after having deteriorated, contained protein of higher quality than the diet required. More critical tests are needed to establish the nature of the observed effect.

CONCLUSIONS

1. The results of using a large series of fish meals as the sole source of amino acids in chick diets revealed a variation in protein quality.

2. A correlation has been shown between higher drying temperature used in manufacturing meals and a lowering of protein quality, as measured by growth rate of chicks fed these meals; but other factors must be important because some meals dried at high temperature were of good quality.

3. There appears to be some correlation between growth rate of chicks and composition of meals as measured by moisture-plus-oil content. This indication needs further study.

4. There also appears to be a correlation between protein quality and the duration and temperature at which the meal was stored after manufacture. Again, this possible correlation must be confirmed by additional work before it can be considered as being definitely established.

SUMMARY

More than 100 fish meals were studied as sole sources of amino acids in chick diets in an attempt to determine if variables during processing are related to protein quality of the final product. For most of these variables, no correlation could be established. A relationship between drying temperature during the manufacture of the meal and the resulting growth rate when the meal was fed, however, was indicated. Some indication also was obtained that growth rate of fish meals may be related to meal-storage conditions after manufacture and also to the composition of the meal as measured by the moisture-plus-oil content.

Note: The continued interest and aid given this research by the State Feed Laboratory, California Department of Agriculture, is gratefully acknowledged. We are particularly indebted to Van P. Entwistle and the late William L. Hunter for the proximate analysis values reported.

Acknowledgment is also made to the staff of the College Park and Boston laboratories of the Bureau and particularly to Dr. Hugo Nilson for his collection and preparation of fish meal samples used in this study. M. E. Stansby of the Seattle Technological Laboratory furnished many helpful suggestions.

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CANNED TUNA QUALITY IMPROVEMENT STUDIES

In the production of canned tuna, it is agreed generally that the methods used in handling, chilling, freezing, and storing the fish aboard the tuna clippers and thawing aboard or in the plant affect the quality of the canned product. As a result of the tuna industry's need for more systematic knowledge of the many variables in freezing of tuna, the Bureau of Commercial Fisheries has awarded contracts for the past three year for research in the southern California fishery. The studies have been concerned primarily with the clipper-caught tuna which are caught far from shore and brine-frozen for delivery to the cannery. Both industry and experimental conditions have been used to determine the effect of time, temperature, and physical handling during chilling and freezing on the general acceptability and yield of the precooked tuna and the canned product. Much of this research has been concerned with the factors in salt absorption during brine-chilling and the subsequent thawing. Current studies include the changes related to bacterial growth during the chilling and thawing operations. As a result of these various research phases, recommendations for improved handling, freezing, and thawing methods are being developed in cooperation with the tuna industry.

As an adjunct to the contract studies, the Bureau's Technological Field Station in southern California has undertaken recently more exacting studies of the chemical composition of the tuna species and the relation to both vessel and plant process variables. Such knowledge of the changes in chemical constituents as protein, oil, salt, minerals, water-soluble vitamins, and objective freshness indices will eventually enable better quality control at each stage of preservation and plant process. Knowledge of these changes is important also to assess the effect of preservation and process improvements. Information on the content of nutritionally-important components of the fresh-caught tuna in relation to their content in the canned product is desirable to determine the effect of natural variations in quality.

At present these long-range composition studies include an initial project on the composition variables in fish of the same lot and species in relation to adequate sampling methods. The subsequent phase will consider the application of the laboratory methods for determining composition differences in the raw, precooked, and canned fish of the same lot.

CHEMICAL COMPOSITION OF PACIFIC COAST FISH AND SHELLFISH

The chemical composition of Pacific west coast marine fish is receiving major attention at the U. S. Bureau of Commercial Fisheries' Seattle Technological Laboratory. Much of the work deals with proximate composition--the content of protein, oil, moisture, and ash.

One of the major projects in this program has been a recently completed two-year study of the variations in proximate composition of halibut meat with regard

to size of fish and different parts of the same fish. The proximate composition of tuna is now under study. The over-all plan involves determination of composition of different parts of light and dark meat in a variety of sizes with regard to species, area of capture, and season of capture. Preliminary work has been completed on albacore, skipjack, yellowfin, and bluefin tuna to determine the scope of the investigation. A more intensive study of albacore is now in progress.

Several species of rockfish and of sole are also under study. Attempts are being made to secure additional specimens in order to give adequate coverage for about 10 species each of rockfish and sole. When a series of pink salmon now on hand have been analyzed, the three-year study on this species will be terminated and a start will be made on silver salmon. Some work done on the proximate composition of Pacific cod will be continued as additional specimens representative of seasonal and area variables become available.

Work on the composition of fish meals has included proximate analysis, carbonate content, and digestibility of fish-meal protein as determined by the pepsin-digestion method. This work has been terminated and reports of the investigations are being prepared.

The sodium content of commercially frozen fish fillets and steaks is of special importance just now due to interest in low sodium diets. Some eastern processors dip the fillets and steaks in brine before freezing them. Very little brine dipping is used on the west coast. Commercially prepared samples of sole, halibut, silver salmon, cod, and ocean perch are being analyzed for sodium content. The samples include both fresh-water and brine-dipped products. Comparative results will be made available on completion of the analyses.

CONTROL OF DRIP IN CHILLED AND FROZEN FISHERY PRODUCTS

When frozen fishery products are thawed, drip in the form of a liquid exudes from the product. In most instances, this drip is lost or discarded. If the exudate is, in fact, fish protein this practice wastes food. Investigating the factors that affect the water retentivity of various frozen fishery products, to develop laboratory procedures for measuring drip, and to determine some of the constituents of drip are the objectives of a project assigned to the Seattle Fishery Biological Laboratory of the U. S. Bureau of Commercial Fisheries. This information will assist the industry to produce a uniform, high-quality fishery product retaining a maximum of the inherent goodness of the fish and provide information required in the setting up of standards or specifications for such fishery products. At present, the species studied is halibut.

The results of our studies indicate that drip or drained weight determinations are not entirely meaningful unless standard procedures for their determination are used. For example, higher drip content or lower drained weight may be obtained for a product by using a higher thawing temperature and/or longer thawing time. Because frozen fishery products are perishable when thawed, we are recommending that drip or drained weight determinations be made at a product temperature not exceeding 40° F.

FREEZING AND COLD STORAGE OF PACIFIC OYSTERS AND FRESH-WATER FISH

Research on the freezing and cold storage of Pacific oysters and fresh-water fish is being carried out cooperatively by the Seattle Fishery Technological Laboratory of the U. S. Bureau of Commercial Fisheries and the Refrigeration Research Foundation. The work for several years has included storage-life studies on various species of fresh-water fish from the Great Lakes and Central States areas, evaluation of antioxidants for extending the frozen storage life of Pacific oysters, and storage-life studies on Pacific oysters. Earlier reports have been published of work on fresh-water fish and on the application of antioxidants.

Currently, the research on Pacific oysters is being confined to methods of freezing. The major objective of this phase of the work is to produce an individually-frozen oyster. Two methods of freezing the oysters individually have been attempted; immersion in brine-glucose solutions of various concentrations, and blast freezing. Immersion-freezing proved unsatisfactory, due to salt pick-up by the oyster meats, and the development of rancidity during subsequent frozen storage. The blast-freezing method has been very successful when the frozen oysters were glazed with either ice, 2-percent corn sirup solids, or 1 percent ascorbic acid, prior to storage.

The blast-frozen oysters were placed separately on metal trays which were held in a blast freezer at -20° F. until the oysters were thoroughly frozen. The frozen oysters were removed from the trays and separated into 4 groups. One group was placed in polyethylene bags without further processing. The other three groups were glazed with either water, 1-percent ascorbic acid, or 2-percent corn sirup solids. Samples of each of these were then placed in polyethylene bags. Each bag contained approximately 3 dozen individual oysters. The bags of oysters were all stored in fiber cartons in a 0° F. room.

The group without a glaze deteriorated rapidly. After 4 months, dehydration and oxidation caused the samples to be judged on the borderline of acceptability. The ice-glazed, corn sirup solids-glazed, and ascorbic acid-glazed samples were in excellent condition up to 8 months of storage. After 10 months, the edges had begun to discolor, causing the meats to have slight off-flavors. However, the product was still edible.

These results indicate that individually blast-frozen oysters glazed with either ice, corn sirup solids, or ascorbic acid may have commercial value from the standpoint of ease of separation and storage life.

NEW PRODUCTS FROM FISH OILS

Marine oils have been used in the past for the manufacture of soaps, paints, and varnishes, shortenings, linoleum, and numerous miscellaneous nonfood products including lubricants and greases. During the past 20 years, the United States domestic market for marine oils has been declining. Partly as a result of increasing industrial research on competitive oils, such as linseed and soybean oils, marine oils have been used less and less. Also, certain undesirable characteristics, such as instability due to autoxidation and ease of rancidification, make marine oils less desirable as raw materials. At the same time, there are strong indications that the European export market, which at the present time consumes a major part of the United States production of marine oils for margarine manufacture, etc., may decline to the point where domestic markets would be unable to make up the difference in stabilizing present and future oil economies.

In an effort to help divert possible economic trouble that could jeopardize the future security of the United States marine-oil industry, the U. S. Bureau of Commercial Fisheries in 1953 began a limited-scale program of investigating the chemistry of marine oils. The principal aim in this early work was to carry out basic research on chemical syntheses involving the polyunsaturated fatty acids--so unique to marine oils--and report the findings to potential users (industrial labs, etc.). In 1954, this program got an added boost with the congressional approval of the Saltonstall-Kennedy Act. This law sets aside a portion of the funds derived from duties on imports of fish and fishery products to be used for the support of government research in behalf of the fishing industry.

At the Bureau's Fishery Technological Laboratory in Seattle, investigations of chemical syntheses involving fatty acids from marine oils have been and are continuing to be carried out. Some of the products of these syntheses include monoglycerides, amines, amides, quaternary ammonium salts, fatty alcohols, alkyl halides, epoxides, xanthates, and sodium alkyl sulfates. These products are unique to marine oils in that they are derived from fatty acids having 14 to 24 carbon atoms and from 0 to 6 ethylenic double bonds.

Several problems are associated with research on new products from marine oils. Air oxidation is the chief problem when handling polyunsaturated compounds. Owing to their high degree of unsaturation, the fatty acids and their derivatives are readily polymerizable in many organic reactions. Polymerization and decomposition reactions result in undesirable side-products that cause difficulty in the purification of many fatty-acid derivatives. Nitrogen is used continuously in our work as a means of providing an inert atmosphere. A centrifugal molecular still is often used to purify the liquid products. With this still, for example, it is possible to separate about a liter of products from polymeric substances in from two to three hours.

The problem of chemical reactivity is sometimes a determining factor as to the type of products obtainable from marine-oil fatty acids. For example, synthesis of alkyl halides from the corresponding fatty alcohols does not proceed in the clear-cut manner as for the lower members of the aliphatic series. Also, primary and secondary halogen atoms attached to C_{18} to C_{22} carbon-chain molecules have been found to be very slow to react and the yields far from theoretical.

Preliminary to much of the organic synthesis work, studies were carried out on methods of separating mixtures of long-chain polyunsaturated compounds. Separations by low-pressure fractional distillation are limited by the amount of decomposition and polymerization that can occur. Separations of these compounds are best carried out by low-temperature fractional crystallization and/or fractional crystallization of urea-inclusion compounds of the corresponding straight chain derivatives.

Another important activity of the marine-oil program at the Seattle Laboratory is the coordination of contract research with universities and other institutions on problems associated with the chemistry of marine oils. Presently, there are three basic and one applied research contracts actively being carried on. The three basic research programs under contract are at the Hormel Institute, University of Minnesota at Austin. These include (1) the determination of the structure and analysis of highly unsaturated fatty acids in marine oils, (2) the study of chemical reactions of marine-oil fatty acids, and (3) the study of the chemistry of the odor problem in marine oils. At the School of Mines and Metallurgy of the University of Minnesota, the applied research contract is carried out on the investigation of the utilization of marine-oil derivatives in ore flotation.

STUDIES ON CHEMICAL COMPOUNDS FORMED DURING SPOILAGE OF FISH

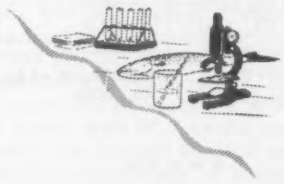
Bacterially-induced spoilage is the most important quality change that occurs in fresh fishery products. A number of interrelated factors together produce the conditions which lead to this quality change and at the present level of technological knowledge it is not possible to completely prevent this change.

The outer surfaces and intestinal tract of all live fish and shellfish are normally inhabited by the bacterial flora of their normal environment--the sea. After capture, and death of the animal the natural defenses against bacteria are removed and the organisms multiply and gain access to the normally sterile tissues. During subsequent handling, until the product reaches the consumer, there are opportunities for additional bacterial contamination. It is not possible wholly to eliminate the conditions through which seafoods are contaminated, nor is there an economical method available to completely inhibit bacterial growth without altering the desirable fresh character of seafoods.

Practices such as careful evisceration, washing, careful handling of fish, use of clean ice, and washing and disinfection of holds, boxes, and other equipment have evolved through the years and have been very important in reducing the degree of contamination. Adequate icing and rapid distribution of fishery products have reduced the biochemical activities of the bacteria and the length of time that the organisms are in contract with the product before it reaches the consumer. The application of these practices has done much in reducing the rate of quality deterioration due to bacterial growth. However, these inovations have not eliminated bacterial deterioration and it still poses a serious problem.

In order to develop new practices that will further decrease the rate of bacterial growth in fishery products additional basic knowledge of the spoilage process is needed. Some of the aspects of this problem that merit attention are: (1) The nature and concentration of some of the lesser known compounds that are formed by bacteria in spoiling fish. (2) The evaluation of the resulting compounds in respect to their effect on flavor and odor of fish. (3) The study of the biochemical activities of some of the predominant groups of organisms that are found on spoiling fish.

At the Seattle Fishery Technological Laboratory of the U. S. Bureau of Commercial Fisheries, we are determining the content of compounds (metabolite) in fish resulting from bacterial activity. Efforts thus far have been mainly directed toward the development of analytical methods which will be used to estimate these metabolites in spoiling fish. In the future it is hoped that work can be started on the estimation of some of the lesser known metabolites such as the carbonyl compounds. It would also be interesting to evaluate the effect of some of the known bacterial metabolites, such as trimethylamine, formic acid, etc., on the flavor and odor of fish.



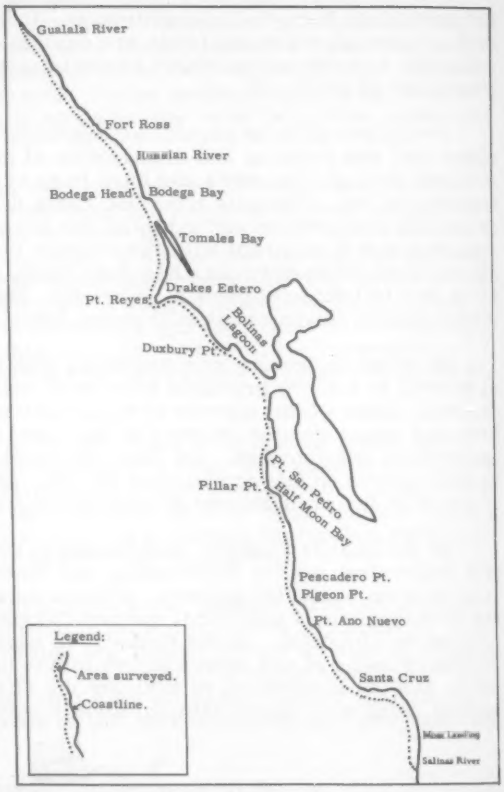
TRENDS AND DEVELOPMENTS

California

AERIAL CENSUS OF COMMERCIAL AND SPORT FISHING CONTINUED (Airplane Spotting Flight 59-7): The inshore area between the Salinas River, Monterey County, to the Gualala River, Mendocino County, was surveyed from the air (April 25-26, 1959) by the California Department of Fish and Game Beechcraft and Cessna 180 to assess the numbers and distribution of clam diggers, abalone pickers, and hook-and- line fishermen.

Rain squalls and fog prevented observations in the majority of the survey area on April 25 except the coastline from Half Moon Bay to Bolinas Bay. Here visual conditions were poor and assessment of fishermen was limited to estimates rather than actual counts.

The entire area was scouted on April 26 and a census was made of abalone pickers, clam diggers, shore fishermen, and pier fishermen. Tides of -1.3 on April 25 and -1.2 on April 26 favored fishing activities for clams and abalone during the morning hours. The largest number of clammers was in Monterey Bay where 470 pismo clammers were counted on April 26. Large groups of people were observed on both days in the area between Pillar Pt. and Pt. San Pedro. This is a popular area for educational field trips. However, some of the people listed were engaged in fishing for abalone.



Flight Report of Beechcraft and Cessna 180 (59-7--April 25-26, 1959).

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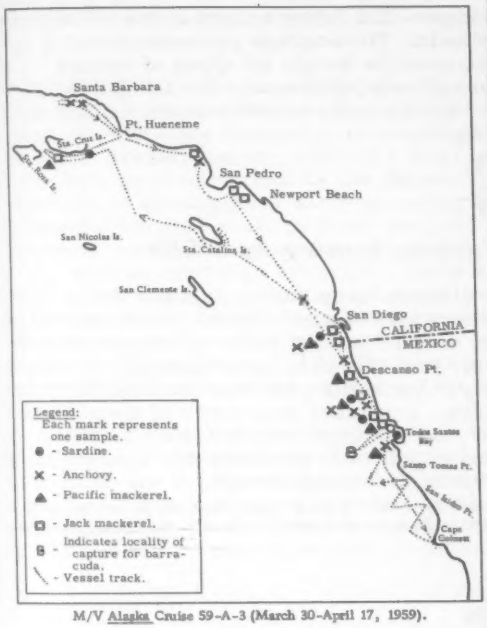
PELAGIC FISH AND BARRACUDA POPULATION SURVEY OFF COAST SOUTHERN CALIFORNIA AND NORTHERN BAJA CALIFORNIA (M/V Alaska Cruise 59-A-3 Pelagic Fish and Barracuda): The coast and islands of southern California and northern Baja California, from Cape Colnett north to Goleta, were surveyed (March 30-April 17, 1959) by the California Department of Fish and Game's research vessel Alaska. The objectives were (1) to sample the spawning population of sardines off southern California and northern Baja California; (2) to assess the relative abundance of sardines, Pacific mackerel, jack mackerel, and anchovies; (3) to collect live sardines for genetic studies being

conducted by the U. S. Fish and Wildlife Service, La Jolla; and (4) to refine barracuda tagging techniques prior to the 1959 sportfishing season by catching and tagging barracuda whenever possible and observing mortality and tag retention in the live-bait well.



M/V Alaska Cruise 59-A-3 (March 30-April 17, 1959).

A total of 76 night-light stations was occupied. At each station a 1,500-watt light and four 750-watt auxiliary lights were used. All lights were illuminated for approximately one hour, whereupon the four auxiliary lights were extinguished and the 1,500-watt light dimmed. The blanket net was then set.

Only 18 of the night-light stations, or 24 percent, yielded one or more of the four pelagic species--sardines, Pacific mackerel, jack mackerel, and anchovies. Anchovies were sampled at 11 stations (14 percent), jack mackerel at 10 (13 percent), sardines at six (8 percent), and Pacific mackerel at six (8 percent).

A total of 472 miles were scouted at night between stations and 239 fish schools were observed--70 were identified as anchovies, 15 as saury, 4 as mackerel, and the remainder unidentified.

Although fish schools were plentiful in the survey area, night-light stations were not as productive of fish as on preceding cruises. The low yield of fish samples can be partly attributed to poor weather conditions. Rough seas in the northern Channel Island area prevented occupation of night light stations in areas where fish schools were visible. In many other areas the efficiency of the night lights was probably reduced by the roll of the vessel in choppy seas.

Ten barracuda were caught, tagged with loop tags, and placed in the live-bait well. Two of the barracuda (36 and 38 inches in length) were caught at Todos Santos Island, and eight (20 to 22 inches long) were caught off Ensenada. One of the smaller fish died and one tag was shed during the cruise. Death was probably due to injuries received from handling prior to gag application. The shed tag had been tied with a square knot rather than the standard double overhand knot.

The barracuda showed little interest or desire to feed upon the live anchovies periodically put in the bait well with them.

Canned Fish

CANNED FISH PURCHASES, APRIL 1959: Canned tuna purchases by household consumers in April 1959 were 847,000 cases of which 47,000 cases were imported. By type of pack, domestic-packed tuna purchases were 182,000 cases solid, 509,000 cases chunk, and 109,000 cases grated or flakes. The average purchase was 1.3 cans at a time. About 28.1 percent of the households bought all types of canned tuna; only 1.7 percent bought the imported product. The average retail price paid for a 7-oz. can of domestic solid or fancy was 34.7 cents and for a 6½-oz. can of chunk 28.2 cents. Imported solid or fancy was bought at 30.6 cents a can. April purchases were slightly lower than the 879,000 cases bought in March by 3.6 percent; retail prices in most cases were slightly lower.

During April, household consumer purchases of California sardines were 55,000 cases; and 25,000 cases imported sardines. The average purchases was 1.9 cans at a time for California sardines and 1.7 cans for imported. Only 1.8 percent of the

households bought canned California sardines and 1.9 percent imported. The average retail price paid for a 1-lb. can of California sardines was 23.0 cents, and for a 4-oz. can of imported 25.6 cents. Retail prices were lower for both California and imported canned sardines. Because of the liberal stocks of canned California sardines, there has been a steady increase in purchases since October 1958.

Canned salmon purchases in April 1959 were 228,000 standard cases, of which 122,000 cases were pinks and 48,000 cases reds. The average purchase was 1.2 cans at a time. About 15.1 percent of the households bought all types of canned salmon; 7.6 percent bought pinks. The average retail price paid for a 1-lb. can of pink was 55.9 cents and for red 84.8 cents. April purchases were down about 8.4 percent from the 249,000 cases bought in March.

Cans--Shipments for Fishery Products, January-April 1959

Total shipments of metal cans during January-April 1959 amounted to 29,964 short tons of steel (based on the amount of steel consumed in the manufacture of cans) as compared with 29,888 tons in the same period a year ago. Canning of fishery products in January-April this year was confined largely to tuna and Gulf oysters. Increased shipments of metal cans during April this year as compared with the same month in 1958 and the preceding month were probably due to later-than-normal stockpiling for the late spring and summer canning season.

Note: Statistics cover all commercial and captive plants known to be producing metal cans. Reported in base boxes of steel consumed in the manufacture of cans, the data for fishery products are converted to tons of steel by using the factor: 23.0 base boxes of steel equal one short ton of steel.

Central Pacific Fisheries Investigations[1/]

EXPERIMENTS ON THE ARTIFICIAL PROPAGATION OF TILAPIA FOR TUNA BAIT CONTINUE TO SHOW PROMISE: Experiments were carried out at the Honolulu Biological Laboratory of the U. S. Bureau of Commercial Fisheries to test a method for inducing early spawning in tilapia and to determine the growth of young tilapia in fresh water, brackish water (16 parts per thousand) and sea water (33 parts per thousand). These experiments in April are part of a series designed to determine the economic feasibility of rearing tilapia for use during skipjack live-bait fishing--as a supplement to the natural bait available to Hawaiian fishermen.

To induce early spawning, heating cables were used in two tanks, one with a plastic cover. During the late winter months, January through March, the fry production in the control tank (unheated) was 5,980, 13,777 in the tank with heater and cover, and 14,767 in the tank with only the heater. The temperatures in the covered tank were as much as 10° F. higher than the control and were 2° F. higher in the uncovered tank. During March and April, air temperatures increased so that the control tank water temperatures did not differ greatly from those in the heated tanks. The production in each of those tanks for the two months was: 6,019 in the control, 1,649 in the covered, and 7,541 in the uncovered. It appears from the results that a relatively slight rise in water temperature may create favorable spawning conditions and that a relatively large increase in temperature is not necessary.

Growth of young tilapia in the three aquaria, one each with fresh, brackish, and sea water, was very poor, averaging less than 1 millimeter per week, even though

1/Research conducted by the Bureau's Honolulu Biological Laboratory is now listed under "Central Pacific Fisheries Investigations" instead of "Pacific Oceanic Fisheries Investigations."

the concentration of young in the aquaria was similar to that which produced good growth in the larger outdoor tanks. On April 9, a new experiment was started in two outdoor tanks, each about 700-gallon capacity. In the first two weeks, the fish grew at a rate of 2 millimeters per week in the tank with 6,000 fish and 3 millimeters per week in the tanks with 3,000 fish. In the latter tank, the total growth was as great in two weeks as during five weeks in the aquaria. These growth experiments are being continued with emphasis on variations in growth as induced by variations in the type and quantity of the food given to the fish.

During calendar year 1958, the Honolulu Laboratory operated a tilapia rearing plant on the island of Maui. This operation, carried out as an experiment to determine the economic feasibility of rearing tilapia for bait to be used in the Hawaiian skipjack livebait fishery, yielded a total of over one million fry. In January 1959, this plant was reactivated by the Bureau's Honolulu Laboratory with the primary objective to determine if early spawning could be induced in order that these supplemental baitfish could be made available to the skipjack fishermen early in the summer season. Heating, filtering, and aeration systems were installed in the tanks, along with an improved drainage. Early spawning was successfully induced. More favorable weather conditions and water temperatures, along with the improvements in the tanks mentioned above, have resulted in a total production of approximately 567,000 fry by the end of the month of May, this to be compared with 73,000 fry during a similar period in 1958. The total production for the month of May approximated 300,000 fry, ten times that for the same month in 1958.

During May, Bureau biologists met with representatives of the Board of Agriculture and Forestry of the Territory of Hawaii and a Hawaiian Tuna canning firm, to discuss the implementation of a Territorial bait-rearing program. The Territorial legislature made an appropriation of $130,000 for the construction of a bait-rearing facility by the Board of Agriculture and Forestry, together with an additional $51,000 for its operation through the next biennium.

* * * * *

RELATIONSHIP FOUND BETWEEN SEA SURFACE TEMPERATURE AND ABUNDANCE OF SKIPJACK TUNA: A study of the ocean climate for the waters surrounding the Hawaiian Island is being made by the U. S. Bureau of Commercial Fisheries Honolulu Biological Laboratory. One section of this study is concerned with the month-to-month, the seasonal, and the year-to-year changes in the temperature and salinity of the surface waters in this area. Principal emphasis has been placed on the gaining of an understanding of those processes which are of primary importance in the fluctuations of the oceanographic properties, particularly the surface temperatures.

These studies have revealed that the rate of sea surface temperature change at any location throughout the area is characteristic of that location. Applying this discovery to data from the Koko Head monitoring station, a number of applications have become apparent. One is that these characteristic curves have a predictive value. The time during the early part of the year when the rate of change of temperature is zero is associated with the availability of skipjack tuna to the commercial fishery. When the index (when the monthly rate of change of temperature is zero) occurs during the last week of February or before, better-than-average total landings for the summer fishing season may be expected. When the index occurs later in the spring, such as in March, a poor fishing season may be expected. These apparent relationships imply that the sequence of oceanographic events in the early part of the year "set the stage" for a favorable environment (or not so favorable) for the skipjack later in the spring and summer.

This year, the index occurred during the first half of February and the shape of the characteristic curve exhibited some features similar to the curve of 1954, a

year during which a total of 14 million pounds of skipjack (one of the best years on record) was landed at Honolulu. From this it was predicted that the 1959 skipjack season would result in a better-than-average catch. The May skipjack catch for the Territory, with a reduced fleet, totaled approximately 1.7 million pounds, the second highest postwar May landings. The catch for the same month in 1958 was about a tenth of this figure; the total 1958 catch was 6.8 million pounds. Hindcasting, using the 1958 characteristic curve, suggested that this would be the case.

* * * * *

SKIPJACK TUNA STUDIES OFF HAWAII CONTINUED (M/V Charles H. Gilbert Cruise 44): Learning more about the skipjack tuna in the waters off Hawaii was the objective of a cruise by the fishery research vessel Charles H. Gilbert of the U. S. Bureau of Commercial Fisheries Biological Laboratory at Honolulu. The vessel re-returned June 1 from a 34-day trip, the third in a series.

Studies of the year-round changes of oceanographic conditions and skipjack landings have led the scientists at the Bureau's Laboratory to believe that skipjack tuna prefer a certain type of water. The year-to-year variations in landings at the Honolulu cannery may be related to variations in time of entry and amount of this type of water, an extension of the California Current, into the Hawaiian area. Its presence may be detected by shipboard chemical analysis and temperature measurements.

During May 1959 the California Current Extension water was spread over a considerable area surrounding the Hawaiian Islands. Intermingled was water thought to be from the Kuroshio Current which flows into the island area from the north and west.

Skipjack schools were seen only when within 100 miles of the Islands, and the most promising schools were observed 40-60 miles west and northwest of Kauai during mid-May. A number were caught and released after being marked with a special tag. Information obtained when these tuna are recaptured will add to knowledge of the growth and migration of these commercially-important fish.

Flag-line fishing was carried out and net tows were made to determine the kinds and abundance of marine animals to be found in the various types of ocean water encountered during the cruise.

Crabs

NORTH AND SOUTH CAROLINA BLUE CRAB STUDIES: The U. S. Bureau of Commercial Fisheries wants to know the cause of the annual fluctuations in size of the Atlantic blue crab stocks, the distribution of the stocks, and methods for predicting the annual abundance of crabs.

BLUE CRAB

To find those answers, the Bureau is tagging crabs in South Carolina and North Carolina. Results of tagging 1,642 mature crabs (over 5 inches in width) in January 1958 in the estuary of the North Edisto River, S. C., indicated no substantial movement of tagged crabs away from that area. To substantiate these findings and to determine if crab movement in other estuarine areas is similar, 2,088 tagged crab were released in the North Edisto River, Charleston Harbor, and Bull Bay during the January-March 1959 period. As in 1958, the studies are in cooperation with the Bears Bluff Laboratories, Wadmalaw Island, S. C.

Of the 6,250 commercial size crabs (over 5 inches in width) tagged in the Neuse River and Pamlico Sound, N. C., in 1958, 29.3 percent of the Neuse River tagged crabs and 16.4 percent of the Pamlico Sound tagged crabs have been recaptured.

Croakers

FISHERMEN NOT RESPONSIBLE FOR SHORTAGE IN CHESAPEAKE BAY: Sport and commercial fishermen together catch only one in ten croakers that disappear from the Chesapeake Bay each summer, according to biologists at the Virginia Fisheries Laboratory, Gloucester Point, Va.

"Of all the older croakers entering the capes from the Atlantic each spring, two-thirds apparently die or disappear before they return to the ocean in the fall," points out one of the biologists who has been analyzing the returns of fish tags from croaker fishermen during the last two years. "However, only one tenth of the total deaths can be attributed to fishermen," he declared. Another biologist, in charge of the Laboratory's finfish investigations, adds further that age analysis investigations have indicated that croakers are not particularly long-lived fish. The rate of decline in numbers of older fish in the Bay compares closely with the estimate made from tag returns.

These results counter the traditional idea that the decline of a fishery is invariably due to too many fish being caught. Although this may definitely be so from some fisheries, it has not been demonstrated to be a primary cause for decline of the croaker fishery. Natural causes of decline, though not as obvious to fishermen as the fish they see landed in their boats, often play a major part in bringing about a scarcity. Many natural conditions reduce the numbers of fishes in the Bay. These include long periods of unfavorable weather, disease, and increased numbers of other fish which may compete for food or may prey on croakers.

Studies to date show that commercial and sport fishing in the Bay does account for the death of millions of fish, but has relatively little effect on the total abundance of croakers in Virginia. Hampering fishing efforts with unsound regulations may rob fishermen of their bread and butter and the fishery will not be benefited.

Unfortunately fishery scientists do not yet have the detailed information needed to accurately determine the normal mortality (death) rate of most marine fishes. More research in this vital area is necessary. As the biological and physical mechanisms effecting changes in fish populations are better understood, biologists will more accurately forecast the abundance of fish and will give explanations for "good and poor" fishing seasons.

Federal Purchases of Fishery Products

DEPARTMENT OF DEFENSE PURCHASES, JANUARY-MAY 1959: Fresh and Frozen Fishery Products: For the use of the Armed Forces under the Department of Defense, 2.0 million pounds (value $1.1 million) of fresh and frozen fishery products

Table 1 - Fresh and Frozen Fishery Products Purchased by Military Subsistence Market Centers, May 1959 with Comparisons

QUANTITY				VALUE			
May		Jan.-May		May		Jan.-May	
1959	1958	1959	1958	1959	1958	1959	1958
(1,000 Lbs.)				($1,000)			
1,997	2,054	9,134	9,310	1,035	1,152	4,817	5,294

were purchased in May 1959 by the Military Subsistence Market Centers. This was less than the quantity purchased in April by 8.7 percent and 2.8 percent under the amount purchased in May 1958. The value of the purchases in May 1959 was higher by 5.4 percent as compared with April, but was 10.2 percent less than for 1958.

For the first five months of 1959 purchases totaled 9.1 million pounds, valued at $4.8 million--a decrease of 1.9 percent in quantity and 9.0 percent in value as compared with the same period of 1958.

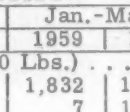
Prices paid for fresh and frozen fishery products by the Department of Defense in May 1959 averaged 51.8 cents a pound, about 6.9 cents higher than the 44.9 cents paid in April, but 4.3 cents lower than the 56.1 cents paid during May 1958.

Canned Fishery Products: Tuna and sardines were the principal canned fishery products purchased for the use of the Armed Forces during May 1959.

Table 2 - Canned Fishery Products Purchased by Military Subsistence Market Centers, May 1959 with Comparisons

Product	QUANTITY				VALUE			
	May		Jan.-May		May		Jan.-May	
	1959	1958	1959	1958	1959	1958	1959	1958
	(1,000 Lbs.)				($1,000)			
Tuna	424	315	1,832	1,270	210	158	868	640
Salmon	7	-	7	1,327	5	-	5	724
Sardine	229	-	509	33	26	-	72	12

Note: Armed Forces installations generally make some local purchases not included in the data given; actual total purchases are higher than indicated, because it is not possible to obtain local purchases.



Fish-Farming

LAND PURCHASED IN ARKANSAS FOR RESEARCH: Purchase of two tracts of land in two important Arkansas rice, soybean, and cotton growing areas for the development of a fish-farming research station was announced on June 1 by the U. S. Department of the Interior. The land acquired for the projects totaled 296 acres.

The purpose of the research is to provide practical ways by which fish-farming can be conducted profitably in conjunction with agricultural crop growing. The University of Arkansas, through its network of agricultural experiment stations, has long been interested in finding income crops for rotation with rice production, and experience in recent years indicates that fish might be such a crop. However, numerous problems on stocking, disease control, predation, competition, and reservoir management must be solved before that type of fish-farming can be economically feasible.

On March 15, 1958, the President signed a bill which authorizes two major fields of activity:

(1) Biological research on all the problems of fish rearing--selection of species, parasites and diseases, reproduction, food requirements, water quality, predation and competition, and selective breeding for special qualities of growth, disease resistance, and tolerance to special conditions.

(2) Technological improvement--harvesting methods and preparation of fish for the market.

The two Bureaus of the U. S. Fish and Wildlife Service--the Bureau of Sport Fisheries and Wildlife and the Bureau of Commercial Fisheries--will work together to carry out all the provisions of the Act. The former, which does research on fish-cultural problems and fresh-water fishery management, and operates some 100 fish hatcheries over the country, will have responsibility for the biological research, and the latter for technological and market promotion aspects.

One of the purchased tracts comprises 85 acres immediately adjacent to the Rice Branch Experiment Station near Stuttgart. The other is 211 acres adjoining the Southeast Branch Experiment Station at Kelso (P. O. Rohwer). Thus there will be excellent opportunity for close cooperation, joint research effort, especially in crop rotations, and day-to-day consultation. These opportunities are enhanced by the fact that crop research specialists of the U. S. Department of Agriculture are stationed at one of the two University experiment stations.

Biologists of the Arkansas Game and Fish Commission, the Agricultural Extension Service, and the Soil Conservation Service of the Department of Agriculture have had a long-time interest in man-

aged farm ponds and reservoirs for multiple use, including fish and waterfowl. They have provided technical and extension services and consultation to farmers and the general public on pond and reservoir construction, stocking, and management with the best information available.

Other activities, like fishery economics and market promotion and development, are long-established functions of the U. S. Fish and Wildlife Service, and limited assistance has been given to fish farmers already. The very great problem of weed control will be given attention principally by the University of Arkansas Agricultural Experiment Station, Department of Agriculture, in cooperation with fishery biologists.

The U. S. Bureau of Sport Fisheries and Wildlife is making plans for construction and staffing the new station. The Stuttgart site will have a headquarters and laboratory building, experimental ponds, and a small reservoir. The southeastern land will be developed for larger-scale experimentation to extend and test the laboratory fisndings. Although long-range and fundamental research will be included in the program, it can reasonably be expected that useful results will come from time to time for practical application. These will be made available promptly through publication to all interested, and to the State Game and Fish Commission, the Agricultural Extension Service, other State conservation agencies, and the Soil Conservation Service for use in their technical and extension activities.

The Stuttgart property will have a modern, functional laboratory, fish-holding facilities, a service building for shop, garage, and storage, a reservoir of about 30 acres, and experimental ponds ranging from one-tenth acre to one acre in surface area. The Kelso land already has a building and a high gallonage rice well, and an adequate surface water supply. Well-stablized levees have been constructed on three sides of 160 acres of the plot. Five-, ten-, and twenty-acre reservoirs are planned for the site. There is excellent prospect for experimental work on two nearby 80-acre reservoirs to be constructed by the landowner.

Construction of facilities and the development of the two tracts of land for research purposes, and initial staffing will proceed as soon as appropriations are made. Engineering specifications have not been drawn up, but a general layout plan has been made with the advice and assistance of Dr. S. W. Ling, fishery expert for the Food and Agricultural Organization of the United Nations. Dr. Ling recently visited the sites in Arkansas as well as several research stations and fish hatcheries in the South.

Professional staffing contemplates a team of research specialists in aquatic biology, microbiology and parasitology, physiology, biochemistry, biostatistics, and genetics. There will also be supporting personnel for fish handling, water management, and maintenance.

Work with several groups of fish can be foreseen now. The catfishes, buffalofishes, and basses will be important, and an additional good possibility is for carefully controlled experiments with a desirable import which has not yet been tried in the United States.

Fisheries Loan Fund

LOANS APPROVED THROUGH MAY 31, 1959: As of May 31, 1959, a total of 575 applications for fisheries loans totaling $18,610,193 had been received. Of these 313 ($7,654,233) have been approved, 209 ($5,740,789) have been declined or found ineligible, 41 ($1,677,126) have been withdrawn, and 23 ($2,916,029) are pending. Several of the pending cases have been deferred indefinitely at the request of the applicants. Sufficient funds are available to process new applications when received.

The following loans were approved between April 1 and May 31, 1959:

New England Area: Alexis Fagonde, Jr., Beals, Me., $3,000; Murray Pinkham, Boothbay Harbor, Me., $4,000; Frederick P. Elwell, St. George, Me., $2,000; Elizabeth N. Corporation, Fairhaven, Mass., $36,830; Tripolina Bramante, Medford, Mass., $35,000, C & F Fishing Corporation, New Bedford, Mass., $46,600.

South Atlantic and Gulf Area: Sidney J. Clopton, Pensacola, Fla., $14,800; W. D. Coons & A. E. Moorer, Mt. Pleasant, S. C., $17,000.

California: Wm. Howard Day, San Diego, Calif., $19,950; Wm. G. Huston, San Diego, $7,000; Salvatore Tarantino, San Francisco, $2,500.

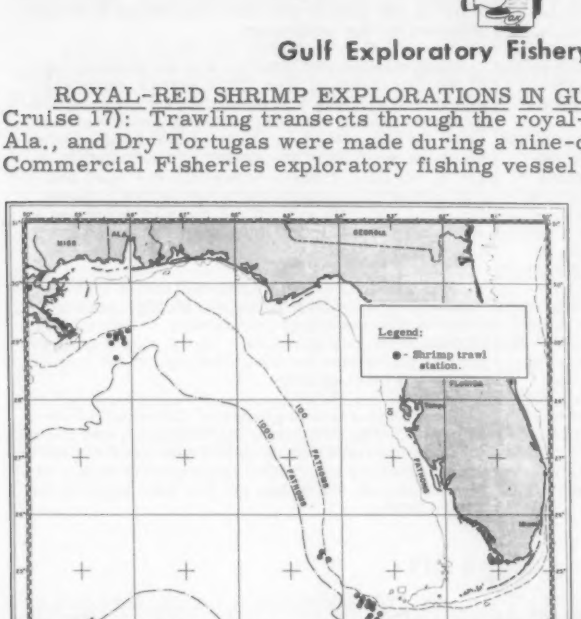
Pacific Northwest Area: Kenneth E. Staffenson, Agate Beach, Oreg., $3,500; Clayton C. Howe, Anacortes, Wash., $2,000; Alex. C. Prankard, Olympia, Wash., $6,232; Earl E. McCarthy, Seattle, Wash., $29,600; Ora L. Olson, Snohomish, Wash., $29,524.

Alaska: Douglas R. Freed, Elfin Cove, $2,500; Edward K. Haffner, Juneau, $5,600; Sig Dale, Ketchikan, $3,305; Victor Edenso, Ketchikan, $6,000; Arne Iverson, $10,500.

Hawaii: Sea Queen Fishing Co., Honolulu. $20,000.

Gulf Exploratory Fishery Program

ROYAL-RED SHRIMP EXPLORATIONS IN GULF OF MEXICO (M/V Silver Bay Cruise 17): Trawling transects through the royal-red shrimp grounds off Mobile, Ala., and Dry Tortugas were made during a nine-day cruise of the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Silver Bay. The objective of the trip was to determine the availability of red shrimp in the two areas previously delineated by the Bureau's vessel Oregon and to check on optimum fishing depths. Forty-foot trawls were used.



M/V Silver Bay Cruise 17 (June 2 to 12, 1959).

The best catches were made southwest of Dry Tortugas where nine drags between 100 and 500 showed red shrimp present in depths ranging from 160 to 300 fathoms. Fishable concentrations were present between 180 and 220 fathoms. Two four-hour drags in 200 fathoms caught 500 pounds of 31/35-count red shrimp.

Eight drags were made off Mobile between 200 and 600 fathoms. Royal-red shrimp were present in all catches between 200 and 400 fathoms but only in small numbers.

Four exploratory drags in the red shrimp depth range along the eastern edge of Campeche Bank resulted in gear damage due to bad bottom.

During the run between Campeche Bank and the North Gulf trawling area numerous mixed schools of skipjack and blackfin tuna were observed, chiefly in the early morning and late afternoon. A large concentration of schools of very small unidentified tuna was observed between 27°30' and 28° north latitude along 88°20' west longitude.

Insecticides and Pesticides

INTERIOR DEPARTMENT ENDORSES ENLARGED RESEARCH PROGRAM ON EFFECTS ON FISH AND WILDLIFE: Endorsement of legislation to increase the scope and value of the research now being conducted to determine the effect of insecticides and pesticides upon fish and wildlife resources was announced by the U.S. Department of the Interior on June 21.

Investigations which have been made under existing legislation clearly indicate a problem of much greater magnitude than originally contemplated and show that the existing authorization is inadequate, the Department report stated.

In letters to Chairman Warren S. Magnuson of the Senate Committee of Interstate and Foreign Commerce and to Chairman Herbert C. Bonner of the House Committee on Merchant Marine and Fisheries, Assistant Secretary Ross L. Leffler cited some of the known harmful effects of current practices in the use of pesticides on wildlife and on fresh-water and salt-water fish. Four major objectives of the research program listed in the report are:

(1) To determine the acute and chronic toxicities of some 200 basic pesticidal chemicals on the market, plus the many which are in various stages of development;

(2) To conduct chemical analyses of plant and animal tissue to determine the presence of pesticide residues, to develop diagnostic procedures for determining suspected poisonings, and to measure the degree and duration of toxic conditions in fish and wildlife habitats;

(3) To carry out field appraisals of immediate and long-range effects of pest control operations upon fish and wildlife populations;

(4) To facilitate the compilation and dissemination of findings from research studies so that chemists, entomologists, and others may apply such knowledge in the development of new pest-control materials, formulations, and techniques of application to minimize hazards to desirable forms of animal life.

The Assistant Secretary for Fish and Wildlife pointed out that while in 1940 the wholesale value of the pesticides then being used in this country was $40 million, this had jumped to $290 million in 1956. By 1975, it is estimated that the wholesale value of such materials will aproach the billion dollar mark. One-sixth of all the croplands and millions of acres of forests, rangelands, and marshlands are treated annually with these chemicals. Most of these areas are important wildlife and fish habitat.

Some of the chemicals persist in the soil for periods of three to five years or longer. Certain food chain organisms, such as earthworms, living in treated soil or waters, tend to concentrate the poison in their body tissue. Hence, birds like the woodcock or robin, as well as aquatic creatures--fishes, crabs, shrimp and oysters--are affected when they feed upon contaminated organisms.

Studies made to date have shown that DDT may kill fish and other aquatic life when applied at dosage rates in excess of one-quarter pound per acre; two pounds per acre will kill birds; five pounds will cause heavy mortality among mammals. Other insecticides such as heptachlor, dieldrin, aldrin, and endrin, have acute toxicity ranges of 15 to 200 times that of DDT.

Considerable aerial spraying is carried out over salt-water marshes, particularly in the East, and control chemicals applied to land areas adjacent to inshore water reach important fish-producing water by drainaga. There is thus need to determine the effects of pesticides on inshore aquatic life--fish, shrimp, and shellfish--which live in these waters as adults and on these species for which the marshes and estuaries are essential nursery grounds. Menhaden, shad, striped bass, croakers, and sea trout or weakfish are reared in those areas during their early stages. Shrimp, crabs, oysters, and clams which support major commercial fisheries, spend a part or all of their lives in inshore environments.

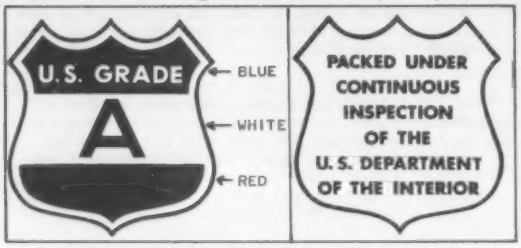
Findings from limited studies carried out at the Galveston Laboratory show that lindane, an insecticide employed for the control of mosquitoes, is very toxic to shrimp. A total kill of laboratory test animals resulted within 24 hours after exposure to concentrations of the chemical as low as five parts per billion. Other findings reveal that crabs may be killed by eating fish containing low levels of malathion.

The proposed legislation, H. R. 5813 (S. 1575), would raise the authorization from $280, 000 to $2, 565, 000 a year. The Assistant Secretary stated that while the present appropriation authorization was inadequate, no specific authorization should be listed in the Act. He recommended that the research program be permitted to expand on a logical and scientific basis and that funds be requested from Congress as required by circumstances and in accordance with established budgetary procedures.

Inspection of Fishery Products

SEATTLE FISH PLANT STARTS PACKING UNDER USDI INSPECTION: Continuous USDI inspection of fishery products was started by one of the larger fish processors in Seattle the latter part of May. This is the first plant in the Northwest to use the voluntary continuous inspection of fishery products now offered by the Bureau of Commercial Fisheries, U. S. Department of the Interior, Seattle. Products produced under continuous inspection may show on the label the shield bearing the U. S. Grade and the words "Packed Under Continuous Inspection of the Department of the Interior." Halibut and salmon steaks and cod fillets are being packed under inspection at the plant. Packing of frozen swordfish steaks and king crab meat will be included later.

Inspection and grading services are available on a fee basis to processors who meet the existing standards of quality for fishery products. Grade standards are now available for halibut steaks, fish sticks, breaded frozen shrimp, and haddock fillets. Grade standards for salmon steaks, cod fillets, and frozen raw breaded fish portions will be available shortly. Inspection services are also available to assure wholesomeness of the product and conformity to written specifications for fishery products not presently covered by established standards.



Shield using red, white, and blue background. Shield with plain background.

There are now 23 plants throughout the country packing 47 fishery products under the Bureau's continuous inspection program.

Institutional Consumption

STUDY POINTS UP POTENTIAL FOR FISHERY PRODUCTS IN MANUFACTURING PLANTS' EATING FACILITIES: The market potential for fish and shellfish (fresh, frozen, and canned) in the eating facilities of the Nation's manufacturing plants is not being fully exploited, a survey made for the U. S. Department of the Interior indicates. The study shows that 85 percent of the plants with food facilities (having 250 employees or more) serve fish and only 52 percent serve shellfish.

Dun and Bradstreet, Inc., made the survey in conjunction with a larger food survey which that firm was making for the Department of Agriculture. The purpose of the survey was to discover and point up areas toward which distributors could direct attention in their drive to sell more of these highly nutritional fishery products. A survey was financed by funds provided by the Saltonstall-Kennedy Act for the betterment of the domestic fishing industry.

The survey showed that manufacturing plants in the northeast section of the country and on the West Coast are more apt to have fish or shellfish on the menu than are plants in the Midwest and South. In the South the use of shellfish on the menu is on a par with the Midwest section of the country.

The survey also showed that the eating places in large plants (plants with over 1,000 employees) are more consistent users of fish and shellfish than those in the smaller plants.

Half of the large plants which have food facilities are located in the north-central part of the United States. This indicates that the possibilities of increasing the sale of fishery products in the manufacturing plants of that region are relatively promising.

The survey showed that company-operated restaurants and cafeterias are more consistent users of fishery products than are contractor-operated eating facilities.

Lobsters

ACTIVITY AND CATCHABILITY OF LOBSTERS: The activity and catchability of lobsters is being studied by the Canadian Fisheries Research Board's St. Andrews Station. The report appears in the Journal of the Fisheries Research Board (vol. 15, no. 6). Activity was measured by the speed with which a lobster retreats when a bright light is turned on it.

When lobsters are accustomed to water of a certain temperature, their walking rate increases with water temperatures from 36° F. to 50° F. and again from 68° F. to 77° F., but there is little change between 50° F. and 68° F. Lobsters used to colder water became more active when temperature increased, but those used to higher temperatures slowed down when moved to either cooler or warmer water.

Fishing experiments in Passamaquoddy Bay showed how much catches fall off as water temperatures go down in the fall. The change in catches fits in well with the decline in activity as shown in the laboratory experiment. The relationship between activity and catchability helps in the interpretation of catch-per-unit-of-effort data. It also explains the improvement in fishing as waters warm in the spring.

Oysters

EXPERIMENT ON GROWING OYSTERS ON RAFTS: An oyster raft culture experiment is being conducted at Taylor's Pond, Chatham, Mass., by the Bureau of Commercial Fisheries Biological Laboratory of Woods Hole, Mass. The study includes oysters from Virginia, Wareham River and Oyster River, Mass. The seed taken from Virginia last fall and held at Taylor's Pond suffered a severe mortality during the winter. The few survivors are not growing as rapidly as the native oysters. If this method of oyster culture is successful, many small salt-water coves and bays can be used for raising oysters despite bottom types.

Salmon

FYKE NET USED IN ALASKA TO MEASURE RED SALMON ABUNDANCE: Each year since 1955 a fingerling fyke net has been installed on the Kvichak River, Alaska, by the Fisheries Research Institute under a Saltonstall-Kennedy Act-financed contract awarded by the U. S. Bureau of Commercial Fisheries to the Institute. The fyke net is designed to obtain an index of abundance of the annual seaward migration of red salmon--the catch of fingerlings in the net was 203,000 in 1955, 50,000 in 1956, 23,000 in 1957, and 1,913,000 in 1958.

The adult red salmon from the ocean which escaped the fishery and entered the Kvichak totaled 250,000 in 1955, 9,443,000 in 1956, 2,965,000 in 1957, and 535,000 in 1958.

The large migration of fingerlings in 1958 was probably brought about by the good escapement in the 1956 brood year and by favorable environmental conditions.

The migrants in 1958 were two years old while those of other years were chiefly three years old. Because fingerlings from the Kvichak usually spend two winters in the ocean to become fully mature before returning to the Kvichak to spawn, a return in 1960 of a substantial portion of the migrants in 1958 is implied.

* * * * *

NEW TYPE OF SALMON COUNTING STATION AT ROCKY REACH DAM ON COLUMBIA RIVER: A radically new type of fish-counting station will be used at Rocky Reach Dam on the Columbia River, the U. S. Bureau of Commercial Fisheries Biological Laboratory at Seattle announced.

At this station the human observer (or camera) is placed in a subsurface room and looks through a large plexiglass window at the weir opening from the side. The counting gate is on the side rather than in the center of the fishway. Those fish which may be traveling up the other side are diverted over by a standard grill. The counting board will be vertical and will contain controllable lights. The opening will be provided with racks for fish-counting tunnels in anticipation of the day when electric counters will be available.

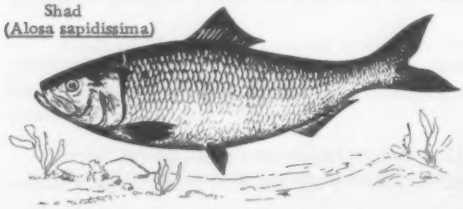
Scallops

TEMPERATURE OF OCEAN WATERS AFFECTS SURVIVAL OF GIANT SCALLOPS: Scallops in the southern Gulf of St. Lawrence undergo mass mortalities that lead to sudden disappearances of local fisheries. A recent report in the Canadian Journal of the Fisheries Research Board (vol. 15, no. 6) suggests why. A series of critical tests showed that scallops are killed by fairly warm water of 69° F. to 74° F. The exact temperature depends upon the previous temperature experience of the scallop, since those which are accustomed to warm conditions are more resistant to rapid warming. Sudden flooding of scallop beds by warm water may thus lead to mass mortalities. Such floodings have been observed to occur.

Rapid changes in water temperatures can damage scallop populations in a second way. Scallops, unlike other shellfish, are ordinarily mobile and actually escape enemies. Sudden temperature changes such as are known to occur, on the Magdalen Shallows, even if not killing, reduce scallop activity and make them easy prey to their enemies. Populations can be greatly cut down by predation.

Shad

ATLANTIC STUDIES CONTINUED: The Bureau of Commercial Fisheries is trying to rehabilitate the greatly depleted Atlantic shad runs. To achieve this goal, stream conditions must be improved, pollution abated, fishways built, and adequate spawning escapements permitted. The Bureau's present research is designed to provide the knowledge needed to do these things successfully.



Shad
(Alosa sapidissima)

Studies on the York River's shad fishery (including Mattaponi and Pamunkey Rivers) were begun February 15, 1959, in cooperation with the Virginia Fisheries Laboratory. The objectives of this study are to determine total catch, fishing effort, fishing rate, size of run, and spawning escapement. As of March 31, a total of 294 shad had been tagged at the river mouth. All fishermen were asked to keep records of their catch and effort.

Data collected in 1959 will be used with those obtained since 1953 by the Virginia Fisheries Laboratory to determine population parameters for each year that catch and effort data are available. When these data have been obtained for a series of years, studies can proceed to determine factors affecting population abundance.

The commercial shad fishing season on St. Johns River closed March 15, 1959. While complete catch data have not been received, it is evident that the 1959 catch will equal or exceed that of 1958 (552,000 pounds) which was the highest since 1947.

The sport fishery for shad on the St. Johns River is the largest on the Atlantic coast. During the 1959 sport fishing season a voluntary creel census, controlled by two sport camp operators, is being conducted. The return of census cards indicated that the sport catch will be higher than that in 1958 when 65,000 (approximately 175,000 pounds) were taken.

Striped Bass

STUDIES IN ALBEMARLE SOUND, N. C.: The construction of dams and increased pollution in the Roanoke River, the most prominent striped bass production tributary of Albemarle Sound, threaten sustained abundance of the population. To resolve the problems confronting the fishery, a cooperative study for developing this river basin by scientific means became necessary. The United States Fish and Wildlife Service began to participate in this study in 1955 chiefly because the Southeastern Power Administration, administered by the Department of the Interior, controls the sale of power generated by the John H. Kerr Dam and needs information relative to minimum river flows required during the annual striped bass spawning migrations.

Attaching disc tag with nylon thread to striped bass.

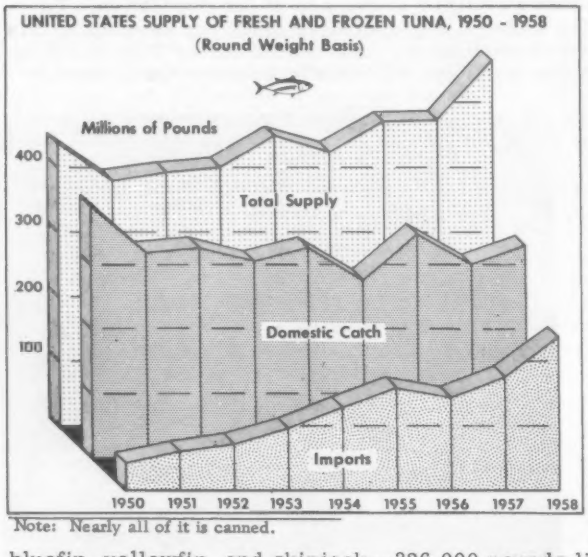
In the 1958/59 season the Bureau of Commercial Fisheries' Beaufort, N. C., Biological Laboratory continued for the third successive year to get catch, effort, and age composition data in the commercial striped bass fishery. In the summer of 1956 seine sampling in upper Albemarle Sound revealed a relatively outstanding abundance of young-of-year fish. The 1956 year-class first appeared in the commercial catch during the fall of 1957. The number of one-year-old fish from this brood year was above normal. The 1956 year-class then constituted the two-year-old portion of the catch in the fall of 1958.

From 1955 through 1958 the fall fishery (September, October, November, and December) in Albemarle Sound yielded 1,117,000 pounds of striped bass. Of this figure, 20 percent was landed in 1955, 20 percent in 1956, 14 percent in 1957, and 46 percent in 1958. The largest portion of the 1958 catch can be assumed to be one- and two-year-old fish since these two age classes constituted from 88 to 95 percent of the total catch each year from 1955 through 1957. Thus, large numbers of young-of-year fish in 1956 and increased numbers of one-year-old fish in the catch in 1957 lead to the conclusion that the pronounced increase in catch in 1958 resulted from an exceptionally large year-class produced in 1956. In 1957 an increase in numbers of one-year-old fish occurred though the total catch was lower then than for any of the fall seasons from 1955 through 1958.

State organizations with limited help from the Fish and Wildlife Service are continuing Roanoke River striped bass population studies to evaluate on a long-term basis the annual abundance of fish in the spawning runs in relation to water discharge from power dams and industrial mill-waste loadings. For the fourth consecutive year a tag-recovery study was begun in March 1959 to estimate population size, spawning escapement and fishing rate.

Tuna Consumption Zooms to Record High in Half a Century

Because the Pacific sardine failed to make its annual appearance in United States fishing waters in 1903, a new fishery was born. When the sardine harvest failed, a few of the hitherto nonutilized tuna were canned and offered to the American public. The canned product was well received and tuna has become the principal fish canned in the United States.



Note: Nearly all of it is canned.

In 1958, 36 canneries in seven States, American Samoa, Hawaii, and Puerto Rico packed 277 million pounds of canned tuna and an additional two million pounds of tunalike bonito and yellowtail. Another 46 million pounds of canned tuna and 12 million pounds of canned yellowtail and bonito were imported in the United States. Tuna is now the leading food fish in quantity landed; and in third place on the basis of value at the ex-vessel level, exceeded only by shrimp and salmon.

Although the industry was started in 1903, records are only available from 1911. In 1911 the Pacific Coast catch was confined to one species, the albacore--850,000 pounds live weight. In 1958, the catch included albacore, bluefin, yellowfin, and skipjack--326,000 pounds live weight, valued at $44.6 million.

Until after the close of World War II the United States market was largely supplied by American fishermen, the imports playing a minor part. In the prewar year of 1939, only 4 percent of the pack produced in American canneries was from imported raw tuna. In the postwar year of 1949, it was 3 percent. But in 1958, more than 39 percent of the American pack was from imported raw tuna.

The increase in the ratio of imported tuna already canned to the total supply was not so noticeable. In 1939, the 10 million pounds of canned imported tuna was 12.6 percent of the supply; in 1958, the 46 million pounds imported already canned, was 14.3 percent of the supply.

The peak year for the United States pack of bonito and yellowtail was 1947, when 9 million pounds were canned. In 1958, the pack was two million pounds. The peak of imports on those two varieties was 1957, when 15.5 million pounds of canned yellowtail and bonito were imported. In 1958, the imports of those varieties amounted to 12 million pounds.

United States Fishing Fleet 1/ Additions

APRIL 1959: A total of 45 vessels of 5 net tons and over was issued first documents as fishing craft during April 1959--14 less than in April 1958. The Gulf area led all other areas with 15 vessels, followed by the Pacific with 13 vessels, the Chesapeake with 9, the South Atlantic with 5, Alaska with 2, and the New England area with 1.

Table 1 - U. S. Vessels Issued First Documents as Fishing Craft by Areas, April 1959

Area	April		Jan.-Apr.		Total
	1959	1958	1959	1958	1958
	(Number)				
New England	1	4	6	7	13
Middle Atlantic	-	-	3	3	13
Chesapeake	9	7	30	31	99
South Atlantic	5	5	23	37	135
Gulf	15	28	40	90	270
Pacific	13	10	21	29	112
Great Lakes	-	-	3	2	10
Alaska	2	5	4	8	31
Virgin Islands	-	-	-	1	1
Total	45	59	130	208	684

Note: Vessels assigned to the various sections on the basis of their home ports.

Table 2 - U. S. Vessels Issued First Documents as Fishing Craft by Tonnage, April 1959

Net Tons	Number
5 to 9	26
10 to 19	8
20 to 29	6
30 to 39	2
40 to 49	1
50 to 59	1
90 to 99	1
Total	45

During January-April 1959, a total of 130 vessels was documented as fishing craft--a decline of 78 vessels as compared with the first four months of 1958. Most of the decline occurred in the Gulf area with 50 less vessels documented as compared with the 1958 four-months period.

1/Includes both commercial and sport fishing craft.

U. S. Foreign Trade

EDIBLE FISHERY PRODUCTS, APRIL 1959: Imports of edible fresh, frozen, and processed fish and shellfish into the United States during April 1959 increased by 7.5 percent in quantity and 6.6 percent in value as compared with March 1959. The increase was due primarily to higher imports of groundfish fillets (up 8.2 million pounds) and frozen albacore and other tuna (up 2.7 million pounds), and to a lesser degree, an increase in the imports of shrimp and canned tuna in brine. The increase was partly offset by a 5.2 million-pound decrease in the imports of canned salmon (down 5.2 million pounds).

United States Foreign Trade in Edible Fishery Products, April 1959 with Comparisons

Item	Quantity			Value		
	April		Year	April		Year
	1959	1958	1958	1959	1958	1958
	(Millions of Lbs.)			(Millions of $)		
Imports:						
Fish & Shellfish: Fresh, frozen, & processed 1/	90.4	66.0	956.8	25.9	19.5	278.4
Exports:						
Fish and Shellfish: Processed only 1/ (excluding fresh and frozen)	5.2	1.3	41.2	1.1	0.3	15.6

1/Includes pastes, sauces, clam chowder and juice, and other specialties.

Compared with April 1958, the imports in April 1959 were up by 37.1 percent in quantity and 32.8 percent in value due to higher imports of groundfish fillets (up 6.6 million pounds), frozen albacore and other tuna (up 11.6 million pounds), and frozen shrimp (up 3.7 million pounds). Compensating, in part, for the increases was a drop of about 2.5 million pounds in the imports of canned salmon.

United States exports of processed fish and shellfish in April 1959 were lower by 32.1 percent in quantity and 47.6 percent in value as compared with March 1959. Compared with the same month in 1958, the exports this April were higher by 294.6 percent in quantity and 266.7 percent in value. The higher exports in April this year as compared with the same month in 1958 were due to better stocks of California sardines available for export to foreign markets.

* * * * *

GROUNDFISH FILLET IMPORTS, MAY 1959: Imports of groundfish and ocean perch fillets and blocks into the United States during May 1959 amounted to 13.9 million pounds--an increase of 2.9 million pounds, or 26 percent, as compared with the same month last year.

Iceland was the leading country with 5.6 million pounds--a gain of 4.2 million pounds compared with May 1958. Canada was second with 4.9 million pounds--2.7 million pounds less than the corresponding month of last year. Denmark followed with 1.7 million pounds (up 400,000 pounds).

During the first five months of 1959, imports of cod, haddock, hake, pollock, cusk, and ocean perch fillets (including blocks) totaled 74.5 million pounds. Compared with the same period of last year, this was a gain of 17.3 million pounds or 30 percent. Canada (27.7 million pounds) made up 37 percent of the 1959 five-months total. Imports from Iceland (26.4 million pounds) comprised 35 percent of the total, while Denmark (9.1 million pounds), and Norway (8.4 million pounds) accounted for 12 percent and 11 percent of the total, respectively. The remaining 5 percent was made up of imports from West Germany, Miquelon and St. Pierre, the Netherlands, France, the United Kingdom, and Ireland.

The quota of groundfish and ocean perch fillets and blocks permitted to enter the United States at $1\frac{7}{8}$ cents per pounds in the calendar year of 1959 is 36,919,874 pounds, based on a quarterly quota of 9,229,968 pounds. The quota for the calendar year 1958 amounted to 35,892,221 pounds. Imports during individual quarters in excess of the established quarterly quota enter at a duty of $2\frac{1}{2}$ cents a pound.

Note: See Chart 7 in this issue.

* * * * *

IMPORTS OF CANNED TUNA IN BRINE UNDER QUOTA AS OF MAY 30: The quantity of tuna canned in brine which may be imported into the United States during the calendar year 1959 at the $12\frac{1}{2}$-percent rate of duty is 52,372,574 pounds. Any imports in excess of the quota will be dutiable at 25 percent ad valorem.

Imports for January 1-May 30, 1959, amounted to 17,689,773 pounds, according to data compiled by the Bureau of Customs. For January 1-May 31, 1958, a total of 16,035,401 pounds had been imported. The quota for 1958 of 44,693,874 pounds was reached on November 20, 1958.

Wholesale Prices, June 1959

Wholesale fishery products prices increased slightly from May to June this year, but were down substantially from June a year ago. The June 1959 edible fish and shellfish (fresh, frozen, and canned) wholesale price index (123.5 percent of the 1947-49 average) was higher by 1.5 percent from the preceding month, but down by 6.1 percent from same month of 1958. During this June groundfish landings continued to drop off from the early spring run; fresh halibut were in good supply and prices were down from a year ago; and the market for shrimp continued weak due to an oversupply, with prices down sharply from last year.

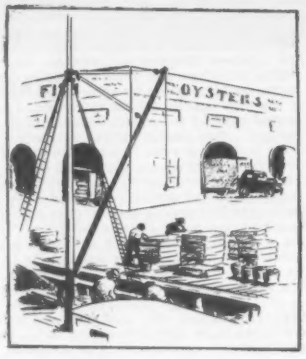


Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, June 1959 With Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/ ($)		Indexes (1947-49=100)			
			June 1959	May 1959	June 1959	May 1959	Apr. 1959	June 1958
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					123.5	121.7	122.7	131.5
Fresh & Frozen Fishery Products:					139.9	138.1	139.6	150.4
Drawn, Dressed, or Whole Finfish:					147.9	145.5	141.9	147.2
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.11	.10	109.1	97.0	76.0	121.6
Halibut, West., 20/80 lbs., drsd., fresh or froz.	New York	lb.	.34	.35	105.2	107.0	102.1	123.8
Salmon, king, lge. & med., drsd., fresh or froz.	New York	lb.	.78	.78	175.8	174.1	171.3	168.5
Whitefish, L. Superior, drawn, fresh	Chicago	lb.	.57	.78	140.1	192.1	241.7	132.6
Whitefish, L. Erie pound or gill net, rnd., fresh	New York	lb.	.88	.95	177.0	192.1	217.4	141.6
Yellow pike, L. Michigan & Huron, rnd., fresh	New York	lb.	.68	.80	158.3	140.7	166.5	129.0
Processed, Fresh (Fish & Shellfish):					136.7	136.4	136.5	151.3
Fillets, haddock, sml., skins on, 20-lb. tins	Boston	lb.	.38	.35	129.3	117.4	97.0	124.2
Shrimp, lge. (26-30 count), headless, fresh	New York	lb.	.85	.86	133.5	136.7	137.4	163.5
Oysters, shucked, standards	Norfolk	gal.	5.75	5.63	142.3	139.2	142.3	139.2
Processed, Frozen (Fish & Shellfish):					122.4	119.8	128.3	139.7
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.39	.39	102.1	100.8	103.4	103.4
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.34	.33	105.2	103.6	111.4	102.0
Ocean perch, skins on, 1-lb. pkg.	Boston	lb.	.28	.28	112.8	112.8	118.8	116.8
Shrimp, lge. (26-30 count), 5-lb. pkg.	Chicago	lb.	.79	.76	121.1	117.6	128.1	152.0
Canned Fishery Products:					100.4	98.6	99.0	104.7
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs.	Seattle	cs.	23.50	22.50	122.6	117.4	117.4	120.0
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	10.80	10.80	77.9	77.9	79.3	84.0
Sardines, Calif., tom. pack, No. 1 oval (15 oz.), 48 cans/cs.	Los Angeles	cs.	7.15	7.15	83.9	83.9	82.2	132.4
Sardines, Maine, keyless oil, No. 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	8.22	8.35	87.5	88.8	87.5	82.5

1/ Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.

The June 1959 wholesale price index for the drawn, dressed, and whole finfish subgroup was up by 1.6 percent from the previous month due to substantially higher prices for large drawn haddock at Boston and for fresh-water yellow pike at New York City, and slightly higher prices for fresh king salmon at New York City. Decreases in wholesale prices for drawn whitefish (down 27.1 percent) at Chicago and round whitefish at New York City (down 7.9 percent) failed to offset the higher haddock, salmon, and yellow pike prices. The subgroup index for this June as compared with June last year was about unchanged (down only 0.5 percent) because this June's lower drawn haddock prices (down 10.3 percent) and substantially lower fresh halibut prices (down 15.0 percent) more than offset higher fresh salmon, whitefish, and yellow pike prices.

The fresh processed fish and shellfish subgroup index from May to June this year was about unchanged. Higher haddock fillet and shucked oyster prices just about compensated for a drop of 2.3 percent in fresh shrimp prices at New York City. The subgroup index in June 1959 as compared with June a year ago was lower by 9.6 percent because of sharply lower prices this June for fresh shrimp (down 18.3 percent). On the other hand, this June's prices for fresh haddock fillets were higher by 4.1 percent and for shucked oysters were up 2.2 percent.

From May to June this year, increases of 1/2 to 1-cent a pound in the wholesale prices for frozen flounder and haddock fillets at Boston and 3 cents a pound for frozen shrimp at Chicago resulted in a 2.2-percent rise in the June index for the frozen processed fish and shellfish. From June 1958 to June this year the subgroup index dropped 12.4 percent, due primarily to a drop of 20.3 percent in the frozen shrimp prices and slight declines in frozen ocean perch and frozen flounder fillet prices. The only increase in June this year over the same month in 1958 was a 3.1-percent rise in haddock fillet prices.

In June this year the over-all index of canned fish prices rose 1.8 percent over the preceding month, but was down by 4.1 percent from the same month of 1958. The light stocks of canned salmon from the 1958 pack resulted in an increase in price of about 4.4 percent ($1 a case) from May to June this year. During the same period wholesale prices for canned tuna and canned California sardines were unchanged (substantial discounts offered below quoted prices), but the price of canned Maine sardines dropped 1.5 percent. The drop in prices for Maine sardines was probably due to the lack of offerings of packs containing the smaller fish. Packing of Maine sardines for the new season did not start until June 1 and the pack was limited most of the month because of the lack of packing-size sardines. The sharply lower primary price for California sardines that has prevailed since the end of the 1958 packing season in December continued into the month of June. Prices for this product in June this year were down 36.6 percent from June a year ago because the 1958 pack was greater. However, Maine sardine prices were higher by 6.1 percent and canned salmon was up by 2.2 percent from June a year ago. As of the end of June there were excellent stocks of canned lightmeat tuna available; the market for California sardines was steady, but substantial stocks remained unsold from the 1958 pack; a subnormal pack of salmon was predicted with a prospect of high prices and inadequate supplies in 1959 and the first half of 1960; and the pack of Maine sardines was predicted to be light unless the small herring appear in large quantities as the season progresses.

FILLETS KEEP BETTER AT LOW TEMPERATURES

It is important during transportation and storage that fish be held as close to ice temperature as possible, or even a degree or so below. A few degrees in temperature make a difference in the spoilage time. For example, five boxes of fillets, which represented a selection of fish of good quality from a Canadian plant, were each stored at temperatures ranging between 31.5° and 77° F. The approximate keeping times were as follows: 31.5° F.--11 to 12 days, 33° F.--6 to 8 days, 37° F.--5 to 6 days, 45° F.--2 to 3 days, 77° F.--22 to 30 hours.

The reduction in the storage temperature from 37° F. to 31.5° F. (5½°) doubled the keeping time. Even the reduction from 33° to 31.5° F. made a very significant difference.

This does not mean, however, that a reduction in storage temperature of 37° to 31.5° F. will add 5 or 6 days to the keeping time of all fillets, regardless of quality or extent of contamination. (Spoilage Problems in Fresh Fish Production, Bulletin No. 100, Fisheries Research Board of Canada, Ottawa, 1954.)

International

FISH OILS

WORLD FISH OIL EXPORTS UP IN 1958:

World exports of fish oils (including fish-liver oils) in 1958 totaled 200,000 short tons, up 5 percent from 1957 and the same as 1956. A sharp decline in exports from the United States was more than offset by larger European shipments and near-record exports by the Union of South Africa.

United States fish-oil exports last year were down one-fifth from 1957 and were one-third below the record volume of 1955. United States shipments to West Germany and the Netherlands--the major markets for United States fish oils--dropped sharply, probably because of more competitive prices for vegetable oils and whale oils used in making margarine.

Fish Oils (Including Liver Oils): Exports from Specified Countries and Estimated World Total, Averages 1935-39 and 1950-54, Annual 1956-58

Continent and Country	1958 1/	1957	1956	Average 1950-54	Average 1935-39
	(1,000 short tons)				
North America:					
Canada	5.8	3.0	9.3	11.6	12.0
United States	47.0	58.5	71.3	42.2	1.2
Total	52.8	61.5	80.6	53.8	13.2
Europe:					
Denmark	12.5	9.8	9.7	6.3	2.5
Germany, West	16.2	14.3	9.3	3.0	2/4.4
Iceland	27.0	20.9	21.3	19.6	24.5
Netherlands 3/	11.8	7.1	9.1	14.5	.2
Norway	28.1	30.7	38.1	33.0	38.0
Portugal	5.5	4.2	4.7	3.8	4/
United Kingdom	3.6	3.4	3.8	4.0	5.0
Total	104.7	90.4	96.0	84.2	75.6
Other:					
Angola	9.4	13.4	5.7	6.7	.7
Japan	6.3	3.5	5.0	6.8	35.0
Union of So. Africa	5/17.9	11.4	5.4	8.9	2.2
Total	33.6	28.3	16.1	22.4	37.9
World total 6/	200.0	190.0	200.0	177.0	135.0

1/Preliminary. 2/Prewar Germany. 3/May include some whale oil. 4/Not available. 5/January-November. 6/Includes estimates for minor exporting countries.

Shipments of fish oils from the several European exporters were up 15 percent in 1958. Norway--the largest exporter in Europe--maintained shipments at a fairly high level despite a sharp decline in output; but stocks were substantially reduced. Almost all the fish oil exported by European countries goes to other Western European countries, Eastern Europe, and the Soviet Union. Iceland's exports were up sharply.

Exports of fish oils from the Union of South Africa in the first 11 months of 1958 totaled 17,890 tons, and were the largest since 1953. (Foreign Crops and Markets, June 15, 1959, U. S. Department of Agriculture.)

FISHERIES AGREEMENTS

FINNISH-SOVIET FISHING AGREEMENT RATIFIED:

On April 4, 1959, Finland and the Soviet Union exchanged ratifications in Helsinki of the Finnish-Soviet Fishing and Seal Hunting Agreement, which was signed in Moscow on February 21, 1959, and ratified by Finland on March 6, 1959. The Finnish press of March 22 quoted a March 21 Radio Moscow announcement that the Presidium of the Supreme Soviet "has ratified the agreement by which Finland is allowed fishing and seal hunting rights in certain Soviet territorial waters." The broadcast quoted a TASS news item to the effect that the Soviet Government at the request of Finland had agreed "that Finnish citizens in certain coastal communes will have the right to carry on fishing and seal hunting in certain Soviet territorial waters in the Gulf of Finland." The agreement carries essentially the same words.

The territorial waters question was not involved in the agreement. The fishing area involved is entirely within three miles of the Soviet coast. The Finnish-Soviet sea boundary in that area had been marked much earlier by the Finnish-Soviet Peace Treaty, and the Soviets presumably consider that they are ceding rights within their waters. The fishermen involved in the agreement would amount to only 40 or 50 who regularly fish those waters. Due to cumbersome Soviet security controls, it is expected that still fewer are expected to use the privilege.

International (Contd.):

FOOD AND AGRICULTURE ORGANIZATION

CHAIRMAN NAMED FOR WORLD SCIENTIFIC MEETING ON SARDINES:

Donald L. McKernan, Director of the Bureau of Commercial Fisheries, United States Fish and Wildlife Service, has been named chairman of the World Scientific Meeting on the Biology of Sardines and Related Species to be Held in Rome, Italy, September 14-21.

The meeting is being held under the sponsorship of the Food and Agriculture Organization of the United Nations. McKernan was the choice of the consultive committee which is helping the Biology Branch, Fisheries Division, of the United Nations set up the conference. Mario Ruivo of Portugal is vice chairman.

Throughout the world the populations of sardines (Sardina, Sardinops, and Sardinella) are subject to massive fluctuations which have mystified scientists and made consistent harvest and market planning impossible. The purpose of the world meeting is to consider methods of determining the reasons for these violent population fluctuations and to eventually create a system of predicting supply in time to give the industry a chance to adjust itself to large or small harvests.

Some of the things which the meeting hopes to document include: the extent to which the sardine resources are being harvested; the extent to which exploitation is hampered by fluctuations, through lack of knowledge of the resources and through the lack of biological information about the species. Other things which will be considered will be the value and means of documenting the information about these species already at hand, methods for exchanging information and teaching services, and the type of meetings to be held in the future to further the program.

GENERAL AGREEMENT ON TARIFFS AND TRADE

14th SESSION OF CONTRACTING PARTIES ENDS:

The Fourteenth Session of the Contracting Parties to the General Agreement on Tariffs and Trade (GATT), which closed May 30, 1959, made important advances towards reducing barriers to world trade.

The Contracting Parties decided to convene a tariff conference commencing in September 1960. The scope of this conference will cover four categories of negotiations: (1) negotiations among Contracting Parties for new concessions, as proposed by the representative of the United States at the Thirteenth Session; (2) renegotiations with member States of the European Economic Community, pursuant to Article XXIV:6; (3) any renegotiations of concessions in the existing schedules which governments intend to undertake before the end of the current three year period of firm validity; (4) negotiations with countries wishing to accede to the GATT.

Other major work of the Session dealt with the removal of governmental restrictions other than tariffs. Such restrictions, largely quantitative controls over imports, have been a major obstacle to world trade in the postwar period.

A highlight of the Session was the decision reached on the important question of German import restrictions. Two years ago it was determined that Germany was no longer in balance-of-payments difficulties and, consequently, was no longer entitled under the General Agreement to restrict its imports on that ground. Since that time the GATT has provided a mechanism through which a solution acceptable both to Germany and her trading partners has been sought.

Under the terms of the decision, Germany has agreed to remove all nontariff restrictions on a wide variety of goods. Some of these goods will be freed from controls as of July 1 of this year; other moves will be taken in stages during the three-year period of the decision. For the goods still subject to licensing, mainly those covered by the Agricultural Marketing Laws, Germany will endeavor to increase the opportunities for the sale of imports, without regard to country of origin.

The Fourteenth Session was the first meeting of the Contracting Parties since the convertibility measures taken by certain countries at the end of last year. The United States Delegation took this occasion to express its views on the significance of convertibility in the field of trade policy. In a comprehensive statement, the United States Delegation pointed out that the broad establishment of external convertibility generally removed the substantive distinction that had existed for two decades between the currencies of dollar countries and the currencies of others.

The United States statement discussed the interests of the United States in the removal of discriminatory restrictions against its exports; it discussed also the interests of other countries in the removal of discrimination and in the general relaxation of governmental controls. There was a general favorable response to the United States statement. It was discussed in the Plenary Session, as well as in the various working parties. Shortly before the end of the Session, the United Kingdom which had consulted on its balance-of-payments restrictions, announced another major move in removing discriminatory restrictions against dollar goods. The wide range of consumer goods and foodstuffs covered by these liberalization measures will bring the treatment accorded United States imports substantially closer to the degree of freedom enjoyed by European exports in the British market.

Another major accomplishment of the Fourteenth Session was the association of two additional countries with the Contracting Parties. Israel's pro-

International (Contd.):

visional accession was approved with full accession to take place upon the successful completion of tariff negotiations between Israel and the Contracting Parties in the course of the general round of tariff negotiations set for 1960. Limited participation by Yugoslavia in the GATT was also approved by the Contracting Parties. In addition, Poland's application for association with the Contracting Parties was received and will be given careful study by a working party.

In addition to these major problems, a large number of other important subjects were treated at the Session. The Contracting Parties adopted a recommendation recognizing the desirability of avoiding restrictions on the purchase of transport insurance. Recommendations on anti-dumping matters, subsidies, and state-trading were considered and accepted. Requests of countries to alter their tariffs were heard, and after careful consideration were approved with provisions limiting the adverse effects on other countries.

The Contracting Parties also heard reports on the consultations held with the European Economic Community (EEC) or "Common Market" regarding trade problems which might arise from the operation of the Rome Treaty. While restating support for the successful development of the Community, the United States representative strongly protested the proposed common external duty of 30 percent ad valorem on tobacco as too high.

The Contracting Parties have decided that the tariff conference to convene commencing September 1960 shall be held in two phases. The first phase, up to the end of 1960, will be concerned with renegotiations with the European Economic Community, and with any re-negotiations of existing concessions. The second phase, opening at the beginning of January 1961, will be concerned with negotiations for new concessions and negotiations with countries wishing to accede to GATT.

In determining the time table outlined above, Committee I took into account the fact that the powers of the President of the United States enabling that country to participate in tariff negotiations (under the Trade Agreements Extension Act of 1958) will expire on June 30, 1962. The Committee also noted that, in accordance with the provisions of the Rome Treaty, the members of the European Economic Community will start adapting their tariffs to the new common tariff on January 1, 1962, which makes it desirable that the renegotiations contemplated in Article XXIV;6 and, for that matter, the negotiations conducted by the European Economic Community for new concessions, be concluded before that date. (U. S. Department of State news releases of June 1 and May 25.)

INTERNATIONAL PACIFIC SALMON FISHERIES COMMISSION

FRASER RIVER SOCKEYE SALMON RUN FOR 1961 LOOKS PROMISING:

A record-breaking sockeye salmon run appears headed for the Fraser River in 1961. Staff field reports of the International Pacific Salmon Fisheries Commission in 1959 indicate that the current seaward migration of yearling sockeye from the large Stuart and Quesnel Lake systems of the Upper Fraser is very heavy, exceeding the highest expectations.

The Washington Director of Fisheries, a member of the Commission, said June 4, 1959, that similar reports preceded the famous 1958 Adams River run of 19 million fish. He added that with favorable sea survival conditions for the young fish now moving downstream it is not impossible that the 1961 run of sockeye to the Fraser River will approach 10 million fish or double the size of the brood-year run in 1957.

The Commission, which is charged with the management of the Fraser River sockeye and pink fishery in both Washington and British Columbia waters, has directed much of its attention to the reestablishment of the once-great sockeye runs to the Quesnel and Stuart systems which were almost destroyed by the Hell's Gate slide in 1913. In that year 30 million sockeye were harvested principally by Washington fishermen. Within a few years after the slide, the Fraser River salmon runs were almost exterminated and it was not until 1945 that international action resulted in the construction of the Hell's Gate Fishways.

In 1941, the cycle year preceding the construction of the fishways, only 1,100 sockeye salmon spawners were counted on the Quesnel River and 5,000 in the Stuart system. Four cycle years later in 1957 the runs had been restored to a phenomenal level with 230,000 spawners counted in the Quesnel and 750,000 in the Stuart.

INTERNATIONAL WHALING COMMISSION

PROTOCOL FOR AMENDMENT OF CONVENTION ENTERS INTO FORCE:

Protocol to the International Convention for the Regulation of Whaling (1946) contains a provision for "Methods of Inspection." The Protocol was signed by the representatives of the Contracting Governments at Washington on November 19, 1956. Since the required number of ratifications have been deposited, the Protocol to the Convention entered into force on May 4, 1959. It was pro-

International (Contd.):

claimed by the President of the United States on May 14, 1959.

Note: Also see Commercial Fisheries Review, October 1958, p. 47.

NORTH PACIFIC FUR SEAL COMMISSION

PELAGIC RESEARCH FOR 1959 COMPLETED BY THE UNITED STATES:

On April 29, the U. S. Bureau of Commercial Fisheries ended its pelagic fur seal research for 1959. On that date, the last of the three vessels chartered to take fur seals at sea was returned to its owners. During the 301 ship-days spent since mid-January 1959 collecting seals off California, Oregon and Washington, a total of 1,546 fur seals were captured. Studies are under way of the stomach contents, age, sexual development, and other characteristics of the animals.

Under the Interim Convention on Conservation of North Pacific Fur Seals, the United States is obligated to take from 1,250 to 1,750 seals at sea annually for research purposes. The other parties to the Convention--Canada, Japan, and the USSR are also obligated to carry on pelagic research.

UNITED NATIONS

AFGHANISTAN SIGNS CONVENTION ON THE HIGH SEAS:

Afghanistan on April 28, 1959, ratified the Convention on the High Seas, done at Geneva April 29, 1958. This Convention regulates the general regime of the high seas, including jurisdiction over vessels, pollution of waters by radioactive waste, and other matters. Although more than 49 nations have signed the Convention on the High Seas, the required number of 22 ratifications have not been received, therefore the convention is not in force.

Note: Also see Commercial Fisheries Review January 1959, pp. 54-55

Australia

ADDITICNAL FUNDS GRANTED TO PROMOTE THE SALE OF PEARL SHELL:

The Australian Government has decided to grant an additional £A18,000 (about US$41,000) to promote Australian pearl-shell sales in the United States, Europe and the United Kingdom. In announcing this, the Minister for Trade said that Australian pearl shell exports to the United States were earning US$1 million a year.

During October 1958, the Australian Government, the Australian pearling industry, and United States importers of pearl shell each contributed £A18,000 to launch the publicity campaign.

* * * * *

JAPANESE PEARL SHELL FLEET OPERATIONS FOR 1959 SEASON:

An 11-vessel Japanese pearl-shell fleet was expected to reach northern Australian waters about June 13 to begin the four-months 1959 pearling season, states a United States Embassy dispatch from Canberra, dated May 27, 1959. The Japanese catch is limited to 375 metric tons during 1959 (474 tons taken in 1958), and the fleet will not be allowed to operate off the coast of Western Australia.

In announcing the details, the Australian Minister for Primary Industry said that owing to the improved quality of plastic buttons, the pearl-shell industry was experiencing marketing difficulties, except for quality shell, and production levels had to be revised accordingly.

* * * * *

SHRIMP LANDINGS, 1953-1958:

Australian landings of shrimp showed substantial increases in fiscal years 1954/55 and 1955/56, but since then they have been dropping steadily (see table.)

Australian Estimated Shrimp Landings (heads-on), by States, 1953/54-1957/58

	1957/58	1956/57	1955/56	1954/55	1953/54
	(1,000 Lbs.)				
New South Wales	1,520	2,386	3,672	4,603	3,558
Victoria	20	-	1	19	-
Queensland	3,000	2,500	2,400	2,000	700
West Australia	147	189	75	26	45
Total	4,687	5,075	6,148	6,648	4,303

Note: Fiscal year--July 1-June 30.

The 1957/58 landings of 4.7 million pounds were down 0.4 million pounds, or 8 percent, as compared with the 1956/57 landings, and were 1.4 million pounds, or 23 percent below the record 6.1 million pounds reported in fiscal year 1955/56.

Brazil

RECIFE TUNA SALES RESUMED:

At the beginning of May the Brazilian Federal Price and Supply Commission raised the retail price of frozen tuna from Cr$30 to Cr$45 a kilo (9.8-14.6 U. S. cents a pound). The Japanese-Brazilian marketing company in Recife had asked for a price of only Cr$40 a kilo (13.0 U. S. cents a pound). Following the increase in prices, frozen tuna became fairly plentiful in the retail markets. It is believed that the Commission raised the retail price to Cr$45 in order to provide a greater retail mark-up margin. However, when the higher price was announced, the Japanese-Brazilian marketing company immediately raised the wholesale price from Cr$23 to Cr$38 a kilo (7.5-12.4 U. S. cents a pound). The retail and wholesale prices for frozen tuna at Recife are subject to further negotiations between the marketing company and the Commission. (United States consulate dispatch from Recife, May 11.)

Note: Values converted at rate of US$1 equals Cr$139.50.

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SHRIMP PRODUCTION AND FOREIGN TRADE, 1954-1958:

Production: Landings of shrimp in Brazil were about 45.6 million pounds in 1957 as compared with about 38.1 million pounds in 1956, and 42.9 million pounds in 1955, according to official sources. Estimates of the landings of shrimp from other sources are much lower (about 45-50 percent) than official estimates.

Imports: Shrimp imports by Brazil are negligible and amounted to only 440 pounds of cured shrimp from Japan in 1955, 602 pounds of canned shrimp from the United States in 1954, and 92 pounds of canned shrimp from Norway in 1956. Other imports of shrimp between 1954 and 1958 were either nonexistent or in quantities too small to report.

Exports: The only exports of frozen shrimp appearing in the official statistics of Brazil between 1954 and 1958 were made to the United States late in 1958 and amounted to 14,400 pounds (value US$3,440 c.i.f.). In 1955, 743 pounds of canned shrimp were exported to Uruguay; in 1957, 37,000 pounds (value US$18,715 c.i.f.) were exported to some unspecified countries. In 1958, Canada received 90,000 pounds (value US$41,803 c.i.f.) and the Union of South Africa received 2,300 pounds (value US$1,404 c.i.f.) of canned shrimp.

The statistics on Brazil's foreign trade in shrimp indicate that beginning in 1958 shipments of both canned and frozen shrimp began to pick up and due to fairly plentiful supplies may increase in the future. The 14,400 pounds of frozen shrimp exported from Brazil in 1958 appeared in U. S. Bureau of the Census import data for February 1959.

British Guiana

INITIAL SUCCESS OF SHRIMP FISHING VENTURE:

The private shrimp fishing venture inaugurated in April in British Guiana by a group of United States fishing companies has met with initial success. Shrimp apparently are being caught in very good quantities, with the best locations reported to be off the coast of French Guiana. An initial shipment of 91,000 pounds was made to New York during the week of May 25 and more are expected to follow shortly.

A fifth United States firm now has become associated in the venture, according to a United States Consulate dispatch from Georgetown of May 29.

Cuba

CUBAN MARITIME AGENCY ABSORBS FISHERIES ORGANIZATION:

The Board of Directors and the Executive Committee of the National Fisheries Institute (Instituto Nacional de la Pesca) were dissolved and their powers and duties entrusted to the delegate of the Cuban Maritime Agency which recently absorbed the formerly autonomous fisheries organization. (United States Embassy dispatch from Havana, dated May 21, 1959.)

Ecuador

FAO TECHNICIAN REPORTS ON SHRIMP FISHING INDUSTRY:

Ecuador's shrimp stocks are stable, reports a Food and Agriculture Organization technician, but the catch per boat is lower due to the large number of vessels fishing for the available supply.

His preliminary investigations of the Ecuadoran shrimp industry have led him to the conclusion that no special conservation measures may be required to guarantee stable shrimp resources along Ecuador's coast, especially in the area of the Gulf of Guayaquil. His opinion is based largely on the circumstances that the weather along the Ecuadoran coastline reflects a practically constant year-around environment. According to the technician, the stable environment suggests that there may be no special spawning season for shrimp, and that shrimp fishing can be scheduled during the entire year. When asked if he thought that indiscriminate fishing of all types and sizes of shrimp might result in depletion of shrimp resources, he pointed out that since one female shrimp lays as many as one million eggs, there was little reason to believe that continuous fishing could destroy shrimp resources. He stated that his tentative conclusion is that it would not be necessary to advise the Ecuadoran Government to establish closed seasons.

His investigations led him to believe that Ecuador could continue in the future to produce about 3-1/2 to 4 million pounds of shrimp for export yearly, provided no unusual changes in ocean currents occurred or no large-scale shrimp migrations took place. In his opinion, the present recession in the local frozen shrimp export trade has been due more to the expanded size of the fishing fleet rather than to disappearance of shrimp from the coast. He feels that the problem simply involves too great a number of boats in operation. He pointed out that the total volume of catches was roughly the same, but that the expanded number of boats in operation had resulted in a sharp decline in the catch per boat. In commenting upon ways in which the total volume of shrimp catches could be increased, he noted that only one shrimp trawler was reported to be equipped for fishing at depths of 40 fathoms or more. He believed that if larger trawlers were available equipped to fish at greater depths, the volume of catches could be easily increased.

The FAO technician also stated that he had heard proposals were under consideration among several fishing companies to form a new shrimp fishing association for the purpose of better organization among fishing companies, the promotion of more modern fishing methods, and for the solution of problems affecting the industry as a whole. Attempts to form such an association had been made before, but those efforts failed due to arguments between the companies. One of the main stumbling blocks to such attempts was the question of regulation of fishing so as to exclude the catching of small size shrimp. While many companies reportedly were in favor of such regulations, several refused to accept such a prohibition and continued to fish all sizes of shrimp.

He also observed the considerable difficulty which continues to exist locally in the matter of obtaining reliable statistics on the number of active fishing vessels and the landings of shrimp and fish. The only currently feasible means of obtaining reasonably-accurate statistics is to seek information from all possible sources and to draw an average.

Aside from the decline in the frozen shrimp export trade which started in 1958, the industry has been facing two additional problems. One of these concerns the occasional attempts of foreign-registered trawlers to engage illegally in shrimp fishing in Ecuadoran waters. An example of this occurred early in 1959 when some Peruvian-flag trawlers were caught by Ecuadoran patrol vessels fishing illegally in Ecuadoran waters in the Gulf of Guayaquil. The other problem faced by the industry concerns illegal business operations among the companies themselves. For example, several companies recently joined together to submit a protest against an alleged practice which they reported had been set up and which comprised the establishment of small companies at the port of Puerto Bolivar, southeast of Guayaquil, which openly purchased up to 50 percent of shrimp catches from the captains of fishing vessels at prices higher than those in the contracts between the captains and the large companies in Guayaquil. (United States Consulate dispatch from Guayaquil, dated May 18, 1959.)

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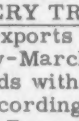
SHRIMP FISHERY TRENDS:

Ecuador's exports of shrimp (mostly frozen) January-March 1959 amounted to 1,381,000 pounds with an f.o.b. value of US$239,962, according to the Central Bank's mimeographed Report on Exports and Production of Major Crops. Shrimp exports during the year 1958 amounted to 3,310,000 pounds with an f.o.b. value of $812,084, while in 1957 they totaled 4,490,000 pounds.

Since trade sources estimate that less than 10 percent of all shrimp caught along the Ecuadoran coast are sold for domestic production, there seems to have been a drop in the catch of shrimp from 1957 to 1958. (United States Embassy dispatch from Quito, May 28, 1959.)



Fiji Islands

NEGOTIATIONS REPORTED FOR JAPANESE VESSELS TO FISH FOR BRITISH FIJI ISLANDS CANNERY:

Lately, attention has been attracted by a report that a canning company in the Fiji Islands (a British territory near Samoa) is hoping to invite Japanese fishermen and technicians to its newly-built cannery. The Japanese Fisheries Agency refuses to comment on the report, which it says is unconfirmed, but it is arousing great expectations in Japanese tuna fishing circles, where at present there is an excess of fishing potential.

According to the reports, conversations have been carried on between officials of Wakayama, Mie, and Aichi prefectures and the president of the Fiji Islands canning company, who came to Japan for the first time in May. It is said that the parties are close to signing a contract. The scope of the scheme is reported as follows:

Prefectural authorities will select boats and fishermen in consultation with local fishery cooperative associations and the boats will sail from Japan in about three months. Vessels of about 150 tons will be used. Contracts will be for one year, but may be renewed if desired. Living quarters have already been built. Tuna

Fiji Islands (Contd.):

can be taken almost all year-round in Fijian waters.

A total of 12 technicians has been requested, including supervisory engineers, refrigeration experts, electricians, and office workers. They will have four-year contracts, and can bring their families from Japan to live with them. Supervising engineers will receive salaries of about ¥200,000 (US$555) a month, plus a bonus on sales over the planned goal. The equipment and supplies for the new cannery have already been purchased. (Nippon Suisan Shimbun, June 3, 1959.)

Greece

FISHING INDUSTRY EXPANDING STEADILY:

The fishing industry of Greece has been expanding steadily since World War II. Through the application of a development program, sponsored and financed by the United States Aid Mission, the industry underwent modernization and expansion during this period.

Before the war about 3,000 small vessels, few of which were motor-driven, engaged in fishing. Since the war, the Greek fishing fleet has increased rapidly both in the number of vessels and average tonnage. At the beginning of 1958 the Greek fishing fleet consisted of 12,716 vessels of which 3,515 were motor-propelled. The Greek deep-sea fishing fleet, which accounts for about 75 percent of the total fish catch, was composed of 795 motor trawlers and purse-seine boats in 1958, as compared to 500 in 1938 and 683 in 1954. Average tonnage of the deep-sea vessels, most of which are of postwar construction, is 41.4 tons per vessel in 1957 as compared with 13.9 tons in 1938. All the deep-sea fishing vessels are equipped with imported or locally-made Diesel or semi-Diesel engines. Many craft have cold-storage facilities and about 80 motor trawlers are equipped with radiotelephone and sonar apparatus. Since 1953 four large fishing vessels of about 500 gross tons each have been added to the country's fishing fleet.

Landings by the fishing fleet increased from 25,000-35,000 metric tons in the prewar period to 46,000 tons in 1953, 60,000 tons in 1955, and 75,000 tons in 1957.

Fish processing also has made marked progress. Greece has some 120 packing plants with annual output of about 6,000-6,500 tons, as compared with a prewar average of 1,500 tons. The fish processed are bonito ("Greek salmon"), sardines, anchovy, mackerel, and tuna. Greece also has these fish canning plants processing primarily bonito, which account for 90 percent of total canned fish production. The Greek fish-canning industry is still relatively undeveloped with production in 1957 only 850 tons. Plans are under way for the construction of modern fish markets in a number of distribution centers, including Piraeus and Patras. These will be equipped with modern handling and storage facilities.

Progress is being made in restocking and developing fresh-water fisheries, particularly in Northern Greece.

Sponge fishing is carried out in Greek waters and off the coast of North Africa. Before World War II the inhabitants of the islands of Hydra, Aegina, and Limnos and those of Trikery (Volos) engaged in sponge fishing and made an annual catch of some 40-50 tons. Since the war Greek sponge production has increased mainly because of the annexation of the Dodecanese Islands, where sponge fishing is an age-long tradition. A total of 149 sponge-fishing craft were in operation in 1956, and 169 in 1957. Production was 115 metric tons in 1956 and 114 metric tons in 1957. The Greek sponge fishing industry is encountering difficulties on the world market because of the competition from synthetic sponges and the requirement of some North African countries that high royalties or fees be paid before Greek fishermen are permitted to operate in their territorial waters.

Despite the very substantial progress made in agricultural and fishery production in the postwar period, Greece still depends on imports for a substantial portion of its food requirements.

Iceland

FISHERIES TRENDS, JANUARY-MAY 1959:

The unusually bad weather in Iceland curtailed fishing during most of February and March. However, catches were so good the following month that by the end of the inshore season in mid-May landings may have equaled the excellent record of 1958. Although the landings picked up, there is some question as to whether or not the value of the winter season landings will equal the 1958 record.

Table 1 - Icelandic Landings[1/] by Principal Species, January-March 1959 with Comparative Data

Species	January-March		
	1959	1958	1957
	(Metric Tons)		
Cod	74,566	85,673	74,338
Haddock	8,424	10,543	9,271
Ling	1,171	2,268	1,590
Wolffish or catfish	3,304	5,121	2,838
Ocean perch	16,667	4,792	2,585
Coalfish or pollock	2,785	3,032	2,478
Cusk	2,061	3,615	1,779
Herring	102	1,422	-
Other	1,283	1,459	1,484
Total	110,363	117,925	96,363

1/Except for herring which are landed round, all fish are landed drawn.

As of April 30, or about ten days before the official end of the winter season, actual production of frozen fish fillets was 1 percent below the April 30 level of 1958. Production of salted fish and stockfish was 8 percent and 9 percent, respectively, below the level of the same period in 1958. Because a higher proportion of the late season catch is being used for stockfish, it is likely that the final stockfish production will be somewhat higher than last year. And because catches held up at the end of the season better than usual, it is still possible that total groundfish production may equal or exceed that of last year.

Table 2 - Icelandic Production of Groundfish Products, January-April 1959 with Comparative Data

Product	January-April		
	1959	1958	1957
	(Metric Tons--Product Weight)		
Salted fish	21,000	22,910	19,670
Stockfish	4,400	4,830	2,970
Frozen fish (mostly fillets)	34,250	34,635	27,150

Total landings for January-March this year of 110,363 metric tons were smaller than for the same period last year, but considerably higher than in 1957 (96,363 tons). For most species except ocean perch, the catch as of March 31, 1959, was no higher than at the same time during the relatively poor catch year of 1957. But the situation improved dramatically in April, and the freezing plants in Faxa Bay and the Westman Islands were often working in shifts through weekends and holidays.

The Icelandic otter trawlers have been at some disadvantage this year by being excluded from fishing within the new 12-mile limit for the areas and times when inshore fisheries are most attractive. But they were less affected by the adverse weather. Despite the loss of the Hafnarfjordur trawler Juli, which foundered in a storm on the way home from Newfoundland in February, the total trawler catch for the first three months exceeded that of last year. During February and March the trawlers fished mostly off the West and South coasts. In April several trawlers moved to the cod fisheries off the Greenland coast, and an increasing number are now returning to the rich ocean perch grounds north of Newfoundland, where as much as 25 tons have been taken in a single haul of the trawl. Indications are that catches are just as good as last fall, and since the trawling on these new grounds started much earlier than last year, there may be a real problem in finding sufficient markets, other than the U.S.S.R., for the vastly increased volume of ocean perch.

But for the adverse weather in February and March it is most probable that the production of fish for the first four months would have been well above last year. Catches in Faxa Bay in January, before the storms forced the boats to port, were one-third higher than last year, and catches were on the whole excellent for the boats in April, particularly at the Westman Islands. While trawlers caught a larger share of the total catch for the first 3 months, the month of April saw a rise in the motorboats' share. In the home fishing grounds, the trawlers had definitely poorer catches than last year, due largely to the 12-mile limit.

At the level of Ikr. 247 millions (US$15.2 million), Iceland's exports for the first quarter of 1959 were 28 percent higher than in the comparable period of 1958. This was a delayed dividend from last year's record fish catch, which left year-end stocks of export products at a level Ikr. 71-million (US$4.4 million) higher than at the end of 1957. For the most part, these stocks were composed of frozen fillets from the heavy catches of ocean perch from the newly-discovered fishing grounds north of Newfoundland. Since the 1958 sales contract with the U.S.S.R. had already been fulfilled in November, it was necessary to store the fillets until a new sales contract could be negotiated with that country.

In both 1958 and 1959 the annual sales contract with the U.S.S.R. was not concluded until February, but this year the Icelandic merchant ships got off to an early start on their deliveries and were actually en route when the agreement was signed.

The sharp increase in exports to the Soviet Union, which were 47 percent higher than for the first quarter of 1958, was thus due to the factors of accumulated stocks and earlier deliveries; it provides no indication of a similar increase in the annual rate of exports. On an annual basis, exports to the U.S.S.R. are likely to be little changed. Although the 1959 contract provides for 26,000 tons of frozen fillets, compared to 25,000 tons in 1958, the fact that the Russians agreed to take a much larger proportion of the contract in ocean perch (23,000 out of 26,000 tons, compared to 11,000 out of 25,000 tons last year) means that more cod will be available for sale to Free World markets, where the demand for ocean perch is limited.

In the case of sales to the United States, however, the increase in January-March 1959, which was 43 percent above exports for the first quarter of 1958, appears to be due to fundamental market factors. The demand and prices have continued strong, and with a relatively poor season for the Canadian fisheries in the North Atlantic, the Icelanders are hopeful of maintaining the present high level of exports to the United States. The bulk of the first quarter increase in shipments to Russia came from year-end stocks, but virtually the whole of the increased shipments to the United States came from the new winter season 1959 catch.

Iran

DEVELOPMENT OF SHRIMP FISHERY IN PERSIAN GULF:

A large expansion of an Iranian company's shrimp fishing activities was announced earlier this year. The Iranian company before the expansion operated two shrimp fishing vessels, one mothership, and a 300-ton cold-storage warehouse in Khorramshahr. The company ships about 40 to 60 metric tons of shrimp a month to the United States. A New York City importing firm has sole importing

Iran (Contd.):

rights in the United States for the shrimp shipped by the Iranian company.

The expansion includes the addition of seven trawlers and one mothership to the Iranian company's fleet. The trawlers in May were on the high seas, riding "piggy-back" on steamers. Four were scheduled to arrive at Khorramshahr on May 28, and three on June 5, 1959. The mothership will arrive in August. The trawlers are 65 footers, having a displacement of 50 tons, and are equipped with Diesel engines. The additional mothership is 1,000 tons gross registry and is equipped for freezing and processing.

The additional trawlers were previously used in Panamanian waters. They are under Panamanian registry and will continue to fly the flag of Panama, at least for a year. The mothership, the Mayon I, is a United States-built vessel now under Guatemalan registry. The trawlers are owned by a Panamanian company which is associated with the New York City importing firm. The vice-president of the New York City firm said that shrimp fishing off Panama has been declining and that this is one reason for the transfer of the vessels to the Persian Gulf.

In addition to co-managership, the New York City importing firm has exclusive rights to the sale of the Iranian company's shrimp production except in Iran and Kuwait, states a May 23, 1959, United States Embassy dispatch from Tehran.

Note: Also see Commercial Fisheries Review, January 1959, p. 67.

Japan

ALBACORE LOIN SALES INCREASING:

According to figures of the Japanese Frozen Foods Exporters Association, tuna loin sales in April and May amounted to 350 tons (215 tons of albacore, 135 tons of yellowfin). There has been a rapid increase in sales of albacore loins, and the price has risen considerably above the check price of $730 a ton f.o.b. The latest price was $780 to $800 a ton f.o.b. (Nikkan Suisan Tsushin, June 8, 1959.)

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ATLANTIC TUNA FISHERY TRENDS:

Beginning the latter part of 1958 the Japanese started fishing tuna commercially in the Atlantic Ocean, principally in the South Atlantic. A Japanese newspaper report states that there are 37 or 38 Japanese vessels fishing in the Atlantic Ocean for tuna, according to the Japanese Export Frozen Tuna Fisheries Association. The vessels land their catches directly in European and Latin American countries, and a large quantity is transshipped to the United States from Latin American countries. In April about 3,000 metric tons were landed in Italy (2,000 tons) and Yugoslavia (1,000 tons) at $285 a ton. The shipment to Yugoslavia was the first of several which are to continue during the sardine season that began in May and ends in November.

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EXPANDING EXPORTS OF FROZEN TUNA TO COUNTRIES OTHER THAN THE U. S.:

A large Japanese fisheries company has already been exporting frozen tuna by direct fishing boat landings in Cuba, Greece, and elsewhere. Its No. 1 Zenko Maru which made a landing in Greece in April, is reported to have put in at Marseilles, on the Mediterranean coast of France, on June 1, and it is thought that she may have succeeded in opening France to direct export of frozen tuna.

It is also reported that another Japanese company has sent its No. 25 Koko Maru into the harbor of Tripoli, in Libya, North Africa, to land about 300 tons of frozen tuna there for the first time.

It is considered certain that the fish (mostly yellowfin) were sold at a price of around $290 landed. Because the United States market has been inactive lately, and there has been a large percentage of rejects on fish transshipped to the United States, it is thought that there will be a tendency to increase direct exports to Europe and Africa in the near future. (Nikkan Suisan Tsushin, June 8, 1959.)

Japan (Contd.):

EXPORT PRICE DROPS FOR FROZEN YELLOWFIN TUNA:

The export price for frozen tuna in Japan early in June dropped to the check price or floor price level of $220 for 20- to 80-pound yellowfin. According to reports, the drop was the result of the lower prices reported on the United States west coast during the past few months. But no export sales at the $220 f.o.b. price have been confirmed.

Another effect of the falling price is that Japanese tuna transshipped through foreign ports, which were contracted for when prices were higher, are lately being subjected to a high rate of rejects by the buyers in the United States, the Japanese report. Japanese frozen tuna traders are particularly perturbed by reports that transshipped gilled-and-gutted tuna, which have not been the target of many rejects hitherto, are meeting with rejects as high as 20 percent when delivered in the United States.

Meanwhile, the Japanese trade is also troubled by depleted stocks of canned albacore for the United States market in the face of a summer albacore season that does not seem to be able to get started. The small lots of albacore that are being landed are selling ex-vessel as high as $360 a metric ton. Unable to find albacore, the boats are landing unusually large quantities of skipjack, which, as it is reportedly too fat for "katsuobushi" makers, is being bought by canners at $110 to $170 a metric ton.

Early in September 1958, the Japanese reported that the export price of frozen yellowfin tuna had dropped from its mid-August 1958 peak of $300 a ton f.o.b. Japan for 20-80 pound "clipper" (ship-frozen) fish. By the end of August 1958, the price was down to $270 for "clipper" fish and $260 for ice-boat fish. Frozen skipjack tuna prices also dropped from a mid-August 1958 peak of $215 for 15-pound fish to $180 for 7-10 pound, $190 for 10-15 pound, and $200 a ton for fish over 15 pounds early in September 1958.

For the first five months of this year, export prices fluctuated only slightly below or above the prices that prevailed in the autumn-winter of 1958 until early this June (1959) when the prices dropped to the check-price level.

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EXPORTS OF MARINE PRODUCTS TO THE UNITED STATES, 1957 AND 1958:

During 1958, Japanese exports to the United States of all marine products (frozen and canned fish, marine oils, and miscellaneous items) of 130,412 metric tons were valued at US$67.5 million, an increase of 31.2 percent in quantity and 15.4 percent in value, as compared with 1957. Frozen tuna exports (62,190 tons) to the United States in 1958 were valued at about US$19.0 million, an increase of 20.4 percent in quantity and 25.7 percent in value over 1957. Exports of all fishery products and marine oils were higher in 1958 as compared with 1957, except for canned crab meat exports, which declined 10.0 percent in quantity and 6.5 percent in value.

Japan's Exports of Marine Products to the United States, 1957 and 1958

Item	Quantity		Value	
	1958	1957	1958	1957
	(Metric Tons)		(US$1,000)	
Tuna, frozen	62,190	51,629	18,973	15,098
Tuna, canned	13,727	12,870	11,754	11,538
Crab meat, canned	2,547	2,829	5,816	6,219
Other canned	19,590	16,370	15,644	13,524
Other fish & shellfish	16,465	13,370	9,391	8,601
Fish & marine animal oils	15,893	2,363	5,962	3,546
Total all marine products	130,412	99,431	67,540	58,526
Pearls, natural & cultured	-	-	9,047	8,185

In addition to the marine products mentioned, a substantial amount of natural and cultured pearls was shipped to the United States.

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EX-VESSEL ALBACORE TUNA PRICE AT RECORD HIGH:

In mid-June, which in normal years would be the peak of the season, baitboat albacore landings in Japan were still running at the low ebb of around 100 metric tons a day, and the ex-vessel price was rising steadily. On June 13 at Shimizu the price hit 170 yen a kilogram (US$430 a short ton), the highest in recent years. For export frozen the price would have to be $470 a short ton in order

Japan (Contd.):

to break even. Since the present export price is barely $360, the freezers have no chance of buying at all. Calculating back from a frozen tuna export price of $360, the ex-vessel price should be about 125 yen a kilogram ($316 a ton) for bait-boat fish and 135 yen ($340 a ton) for frozen long-line fish. But the canners are saying that if they have to buy bait-boat fish at 170 yen a kilogram ($430 a ton), they can buy ship-frozen long-line fish at 165 yen ($417 a ton). Consequently the freezers are also having trouble getting any ship-frozen albacore. It appears that if present conditions continue, it will be impossible to fill more than about half of this year's 30,000-ton export quota for frozen albacore. (Nikkan Suisan Tsushin June 15, 1959.)

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FISHERIES TRENDS IN HOKKAIDO AREA:

Because of a severe decline in various traditional fishing resources in the coastal areas of Hokkaido, a great change has taken place in the Hokkaido fishing industry in postwar years. Between 1929-1944, the bulk of the catch was herring, sardines, and anchovy, which abounded in nearby offshore waters. Herring production, which was 500,000 tons in 1933 has shrunk to less than one-tenth of that figure; anchovy production, even greater in some years, has declined to one-twentieth. The fishermen of the Island have been able to support themselves only by going farther out to sea in motorized fishing craft, and concentrating on salmon, salmon-trout, groundfish, squid, and mackerel. The total catch of these species is several times larger than in the prewar years.

Profitable distant sea-fishing grounds are in the Sea of Okhotsk and near the Soviet-occupied Kurile Islands where, however, Japanese fishermen have been in recent years faced with the problem of seizure and detention by Soviet authorities. Annual negotiations between Japan and the Soviet Union setting restrictions on the catch of salmon, crab, and other fish and any future negotiations concerning fishing grounds are of great concern to the Hokkaido fishing population whose average income is reported to have dropped to 58 percent of the preware figure.

Hokkaido still produces 26 percent of Japan's total supply of fishery products. Salmon accounts for one-quarter of the value of the catch which, beside varieties mentioned above, includes cod, flatfish, scallop, and seaweed. The value of the 1958 production landed in Hokkaido was US$87 million, according to a May 18 dispatch from the United States Consulate in Sapporo.

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INCREASE IN REJECTS IN FROZEN ATLANTIC TUNA DELIVERIES TO CALIFORNIA CANNERS:

With the softening of the United States market for tuna, the frozen yellowfin market in Japan has also been gradually softening. The f.o.b. price of frozen yellowfin tuna was reported to be as of June 10 about $225, close to the check price of $220 a short ton. At the same time the claims or rejects in California on transshipments from the Japanese Atlantic tuna fishery are increasing, bringing headaches to the Japanese industry.

There are at present about 35 or 36 Japanese vessels fishing in the Atlantic, and in April and May they transshiped 3,985 short tons of yellowfin at $235-$245 f.o.b. Lately, however, it is said that claims have increased to as high as 30 percent. Some Japanese trade quarters strongly suspect that these are "market claims" resulting from the good United States landings of yellowfin and the softening of the canned tuna market, reports the United States Embassy in Tokyo. (From Suisan Keizai Shimbun of June 10, 1959.)

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LIBERAL LANDINGS OF SMALL YELLOWFIN TUNA AT SHIMIZU HARBOR:

A total of 76 metric tons of small yellowfin tuna from local grounds was landed at Shimizu, in Shizuoka Prefecture, Japan, on May 28. This was the first such landings of the year. The fish were from 20 to 45 pounds, in good condition, and they sold for the fresh trade at 400

Japan (Contd.):

to 822 yen per kilogram (about US$1,000 to US$2,000 a short ton). These fish were caught by purse-seiners. The schools are reported plentiful in the vicinity of Mikurashima. Many seiners from the Shimizu and Kozu areas have gone after them, and it is expected that landings will continue. (Report from the United States Embassy in Tokyo, based on Nippon Suisan Shimbun, June 3.)

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LIGHT LANDINGS OF SUMMER ALBACORE TUNA CAUSE PRICE RISE:

The Japanese summer albacore season as of June 9, 1959, still had not been able to get started, and landings as of that date amounted to only a little over 2,000 metric tons. As a result the ex-vessel price climbed day by day, and at Yaizu on June 8 it finally reached 150 yen a kilogram (about US$380 a short ton), astonishing the trade.

Buying is, of course, all by canners for export to the United States, and the freezers seem to have completely given up any idea of buying summer albacore. Even if the price rise stops at 150 yen, the canners are saying that they cannot break even unless the price per case of white meat tuna for export to the United States is raised by at least $2 a case over that of the last selling period of the Canned Tuna Sales Company (which was $9.50 f.o.b. Japan).

Packers in the Shimizu area have begun packing albacore from the summer albacore fishery, but landings as of the early part of June continued poor and the ex-vessel price ranged from 125 to 150 yen a kilogram (US$315-380 a short ton).

Skipjack ex-vessel prices are also around $200 a ton, and the canners are operating in the realization that they are going to take a loss as the break-even point on albacore for export is around 100 yen a kilogram (US$252 a short ton), reported the United States Embassy in Tokyo from Nikkan Suisan Tsushin of June 9 and Suisan Keizai Shimbun of June 6.

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MARINE OILS PRODUCTION, FOREIGN TRADE, STOCKS, AND CONSUMPTION, 1957-1959:

Production of edible marine-animal oils by Japan in 1958 amounted to 138,314 metric tons, an increase of 20.3 percent from the 124,325 tons produced in 1957, and a slight decrease from the forecast production of 140,315 tons for 1959.

Japan's Production, Foriegn Trade and Stocks of Marine Animal Oils, 1957-1959

	1959 1/	1958	1957
	. . . . (Metric Tons) . . .		
Edible Marine Oils:			
Production by type:			
Cod-liver oil 2/	4,280	4,230	4,705
Shark-liver oil 2/	1,650	1,500	1,807
Other liver oil 2/	250	265	265
Fish-body oil	24,040	29,980	23,437
Whale oil	110,095	102,339	84,803
Total	140,315	138,314	115,017
Imports all types	1,500	1,495	357
Stocks of all types on Jan. 1	15,021	14,435	8,951
Total Supply	156,836	154,244	124,325
Exports	90,400	91,761	25,668
Inedible Marine Oils:			
Production:			
Sperm oil	34,290	39,896	31,778
Imports	-	-	-
Stocks, beginning of year 2/	2,834	5,019	4,808
Total Supply	37,124	44,915	36,586
Exports	9,940	16,471	49,104

1/ Forecast.
2/ Stocks held by processing factories.

Japan's imports of both edible or inedible marine oils is negligible. Exports of edible marine oils (mostly whale oil) in 1958 were up sharply from 1957 and the predicted exports for 1959 will be up (1.4 per cent) slightly from 1958.

Production of inedible oils (sperm oil) in 1958 increased about 25.6 percent from 1957, but production of sperm oil in 1959 is predicted to drop 14 percent below that for 1958.

The 16,471 tons of sperm oil exported in 1958 was down sharply (66.5 percent) from the 49,104 tons exported in 1957. The forecast for 1959 indicates a further drop of 39.7 percent from the 1958 total.

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NEW VESSELS BEING ADDED TO TUNA FLEET:

On June 5, 1959, the Japanese Fisheries Agency granted construction permits

Japan (Contd.):

for a number of tuna boats, among them a 239-gross-ton live-bait boat, a 245-ton bait boat, a 450-ton long-liner, a 409-ton long-liner, and three 95-ton tuna boats.

In addition, a Japanese company recently ordered a 680-ton (gross tonnage) tuna boat. Construction cost will be about 210 million yen (about $583,000). The vessel will have a 1,300-horsepower Diesel engine. It was expected to be started in July and is scheduled for completion in November.

A Japanese whaling company is moving into the tuna fishery because there are no further chances for expansion in salmon fishing and whaling. The company sent its first boat, the No. 3 Akitsu Maru (240 tons), to sea in mid-May to fish the western Pacific. The company's second tuna boat, the 240-ton No. 5 Akitsu Maru, was scheduled to sail on her maiden voyage on June 11. Both of the vessels were bought from other owners, but the company's building two new boats, one of 1,000 tons and one of 500 tons. Scheduled for completion in October, these new vessels will make one trip to the Indian Ocean, and then will be sent to the Atlantic. The company intends to build or buy two more tuna boats of 350-450 tons.

Also Miyazaki Prefecture's new high-seas fishery guidance vessel, the Miyazaki Maru, sailed on June 9 on her maiden voyage to conduct fisheries guidance and exploratory fishing on southern Pacific tuna grounds. (Nikkan Suisan Tsushin, June 5, 6, & 8, 1959.)

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NORTH PACIFIC FACTORYSHIP SALMON AND KING CRAB FISHERIES TRENDS:

The Japanese Fisheries Agency announced on June 15 the catch of salmon and king crab by North Pacific factoryship fleets as of June 10. The salmon catch to that date was 19,700 tons. The Sea of Okhotsk crab pack was 149,359 cases, and the crab pack by the Tokei Maru fleet in the eastern Bering Sea was 45,769 cases. In all cases, the record was better than last year's. The 16 salmon fleets began operations on May 21 and 22, and by June 10 their catch was about 1,000 metric tons above that of last year at the same time, thus making up completely the 10 days' delay in leaving port. Water temperatures are much higher than last year, all species show signs of being more abundant, and pinks in particular show indications of a regular odd-year high in abundance. The Okhotsk and eastern Bering Sea crab operations had packed by the end of May more crab than at the same time last year by 30,000 cases and 10,000 cases, respectively.

The Canned Salmon Joint Sales Company has made tentative contracts with United States packers for early shipment of 40,000 cases of pink talls, as much as possible to be shipped by the end of June. Japanese land cannery production has lagged, however, particularly of the comparatively unprofitable tall cans, and it was considered that at best only about 20,000 cases could be shipped by the end of June, the remainder being carried over to July. At present the company has consignments equivalent to about 40,000 cases of 96 No. 2 cans, of which only about 8,000 cases are talls.

Of the 19,700 tons of salmon caught as of June 15, red salmon totaled 6,195 tons (36.87 percent), chums 10,200 tons (53.76 percent), and pink salmon 1,650 tons (8.91 percent). The average catch per fishing boat was 15.21 tons of reds, 22.17 tons of chums, and 2.67 tons of pinks, for a total of 40.05 tons per boat.

The Japanese-Soviet Fisheries Commission finally decided on a catch quota of 85,000 metric tons of salmon for the Japanese fleets within the treaty area north of 45° N. longitude on May 13. On May 15 the fleets--16 motherships and 460 fishing boats--sailed for the grounds, and deliveries of fish to the motherships began on May 22. Reports indicate the general pattern of the catch resembles that of 1957, a high year in the cycle of salmon abundance. Deliveries to the motherships have been running 70 to 100 tons a day, somewhat better than last year, and catch rates are 4 to 6 fish per shackle of net. As of early in June fishing was reportedly concentrated between 165° E. and 171° E., at 46°-47° N.

Japan (Contd.):

The Japanese Fisheries Agency decided to divide the catch quota between the mothership fleets and the Hokkaido land-based fishery in the same proportion as last year, giving 70,831 tons to the mothership fleets (154 tons per catcher boat) and 14,169 tons to the land-based boats. Licenses on this basis were formally granted the mothership operators on May 26, and the fishing boats' licenses were sent off to the grounds on a transport on May 27.

The price dispute between mothership companies and fishing boat owners, which threatened briefly to delay the sailing, is still unsettled. The fishermen, claiming that each boat needs on the average of at least 17.5 million yen (US$48,600) to cover expenses, started with a demand for a 25-percent price increase. This would bring reds up to 370 yen (US$1.03) from last year's 315 (87.5 U. S. cents per fish), chums to 175 (48.6 cents) from 125 (34.7 cents), pinks to 95 (26.4 cents) from 78 (21.6 cents), and silvers and kings to 260 (72.2 cents) from 210 (58.3 cents). The companies countered with an offer of a 6.3-percent price increase plus various lump-sum adjustments. The two sides were reported to be gradually approaching a compromise.

It is reported that Soviet patrol boats are unusually active on the fishing grounds, constantly checking the Japanese catcher boats' gear and the distance between their nets. (Nikkan Suisan Tsushin, June 10, 12, and 16, 1959.)

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PLAN TO EXPORT FISH CANNED FOR PET FOOD TO U. S. PET FOOD PACKERS:

The Japanese are planning to pack fish for pet food in large cans for export to United States canners of pet food. Estimates indicate that about 400,000 cases of fish for pet food will be shipped to the United States by the end of this year as compared with the 150,000 cases exported last year.

Prices for export f.o.b. Japan range from ¥900 (US$2.50) a case for all dark meat and about ¥950-980 ($2.70) a case for 50-percent dark-meat pack.

It is expected that the packing of fish for pet food to be used by United States pet food packers as an ingredient in their own pet food will increase. Most of the fish for pet food is now being packed in the Shizouka district, but interest is indicated also in this type of industry in Hokkaido, Sanriku, and Choshi districts.

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PLAN TO REDEPLOY SALMON BOATS TO OTHER FISHERIES:

The Japanese Fisheries Agency and the Japan Salmon Fishermen's Federation began on May 29 to assemble and consider data on measures to be taken in connection with the reorganization of the North Pacific salmon fishery, and particularly the large-scale anticipated reduction in the number of salmon fishing boats. These discussions will serve as a basis for determining the redeployment of the salmon fishing boats into tuna fishing, trawling, or salmon gill-net fishing outside the Soviet-Japanese treaty area.

Present movements in connection with the large-scale reduction in the number of salmon boats are that the Japan Salmon Fishermen's Federation is hoping for Government compensation for those leaving the fishery and for a change-over to tuna boats of the 250-ton class. Not all of the boats would change to tuna fishing, as many as possible being redeployed into trawling and into salmon fishing south of the treaty line. But the salmon fishermen would like to have as many as possible allowed into tuna fishing, at the same time having the Government make better efforts to weed out the prefectural "research vessels," which now number about 40 and catch around 24,000 tons of tuna a year. On the other hand, the Federation of Tuna Fishermen's Cooperative Associations is expressing strong opposition to any government policy of redeploying salmon boats into the tuna fishery. The Shizuoka Prefecture Tuna Fishermen's Association has made representations on this account to Prime Minister Kishi, but the local tuna fishermen's associations in the north-eastern part of

Japan (Contd.):

the country are not showing any such strong opposition. (Nikkan Suisan Tsushin, June 1, 1959.)

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SIXTH ROUND OF CANNED TUNA SALES FOR EXPORT TO UNITED STATES:

The Tokyo Canned Tuna Sales Company held June 3-5 its sixth round of canned tuna sales for United States export during this export year. Only light meat was offered--110,000 cases (25,000 cases each of 7-oz. and 13-oz. cans, and and 60,000 cases of 2-kg. or 4.4-lb. cans.) There will be no change in price, and shipment is to be made from June to August.

Of the 250,000 cases of white meat sold in the fifth round of sales for United States export, about 140,000 cases remained to be shipped in June. According to trading company sources, the market for exports to the United States appears rather strong because of short supplies. Because of the poor Japanese summer albacore catch, United States packers are having trouble buying raw material, and the price of fish is rising, according to the Japanese.

The opinion of the Japanese trade is that the export price for white meat canned tuna for the United States must soon be increased, and in view of the going ex-vessel price of 140 yen per kilogram (US$353 per short ton) for albacore tuna, the Japanese packers are strongly of the opinion that an increase of around $1 a case would be completely inadequate. (United States Embassy in Tokyo from Nikkan Suisan Tsushin, June 3, 1959.)

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SKIPJACK TUNA VESSEL PRICE DROPS:

Large landings of skipjack tuna were being made every day late in May and early in June at the Onahama market in Fukushima Prefecture, and on June 3 the ex-vessel price dropped to 25 yen a kilogram (about $63 a short ton). Small 2-kilogram (4.4-lb.) fish sold for 50 yen (14 U. S. cents) apiece. Landings were 22 tons on May 31, 35 tons on June 1, 101 tons on June 2, and 106 tons on June 3.

The skipjack were taken by pole-and-line and by seiners. At first they were sold at $125 to $150 a short ton ex-vessel, but the successive days of heavy landings brought the price down to the $63-$100 level of June 3. The fish are being shipped fresh within the prefecture and in neighboring prefectures to feed farmhands working at rice transplanting, and are also being taken by driers and canners.

The main pole-and-line fishing ground is 200 to 300 miles east of Cape Nojima in Chiba Prefecture, while the seiners are fishing about 20 miles off Onahama. About 80 seiners from this and other prefectures have assembled at the Onahama base. (Suisan Keizai Shimbun, June 9, 1959.)

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SUMMER ALBACORE FISHING CONTINUES POOR:

Japanese tuna fishermen continued to report poor fishing for summer albacore tuna as of the early part of June. Shimizu, a leading Japanese tuna port, reported no improvement in landings and canners of that city have almost given up hope of packing any substantial quantity of summer albacore tuna this year. Only a little over 600 metric tons (or less than 20 percent of a normal year) have been landed at Shimizu from March 24 (when the first landing of poled tuna was reported) until May 25.

However, skipjack landings have been heavy and tuna packers are packing that species since the ex-vessel or landed price is reported reasonable. Japanese canners report that to pack albacore tuna at prevailing prices means a loss of about 55 U. S. cents a case, while packing a case of skipjack tuna at current prices means a profit of 55 U. S. cents a case.

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TUNA CANNERS HARD HIT BY ALBACORE SCARCITY:

The failure of the Japanese summer albacore fishery is dealing heavy blows

Japan (Contd.):

to both canners and freezers in Japan. The canners, in particular, are hard hit because they are trying to fill the quota for export to the United States. The canners, who judge that it will be extremely difficult to fill their production quotas with purchases of bait-boat albacore alone, are beginning to show an interest in buying shipboard-frozen long-line fish, which has hitherto been monopolized by frozen tuna exporters. The only indication of this trend is the purchase of a small lot by a company at Yaizu on June 10 at US$353 a short ton, and an earlier purchase by another company. (Nikkan Suisan Tsushin, June 11, 1959.)

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TUNA INDUSTRY TRENDS AND PROBLEMS:

When the new Japanese export year began in April, the fisheries trade press was filled with news of conferences to set export quotas and prices for tuna products and to decide the allotment of export business among the producers. There are reports of trouble for Japanese tuna abroad, and movements within the other Japanese fisheries are bringing pressure upon established operators to permit newcomers to enter the tuna mothership field.

On tuna loin and disk exports, the Japanese freezers are reported to have agreed on a 3,000-ton quota for 1959, the same as in 1958, but they are said to be having difficulty in deciding how to allot this quota among the producers. Furthermore, it appears that they have been having trouble selling the 1958 quota, with only 1,394 tons sold to the end of January. Consequently they were moving early in April for a price cut of 10 percent, which would bring the check price for yellowfin loins to $550 a short ton and albacore to $720. The Japanese Fisheries Agency has reportedly been opposing the cut, for fear of stirring up new opposition to Japanese loin exports in the United States, but there were predictions that the Agency will go along with the industry's wishes.

Opposition to a Japanese company's plans to establish canneries in connection with its tuna base projects in Singapore and Penang continues among tuna canners in Japan. On February 12 a group from the Tuna Export Canners Association visited the Fisheries Agency and asked that the overseas base plans be stopped because of possible bad effects on the canned tuna export trade with the United States. The authorities reportedly have not committed themselves on the question, and want the industry associations concerned to work out the problem with Kaigai Gyogyo.

The Southeast Asian tuna base projects of the Japanese company mentioned in the previous paragraph may also be a factor in the Japanese Fishery Agency's decision to seek power to apply to the medium-size (under 100 tons gross) tuna boats the same kind of regulations that currently limit the operations of large tuna boats. These new regulations will tighten up requirements for permission to increase the tonnage of such vessels and will require them to seek special permission to land tuna abroad. It is explained that when the present regulations were drawn up, it was not anticipated that boats of this size would be based anywhere but in Japanese ports; however, the Japanese company's Singapore plans and other similar projects envision the operation of smaller Japanese tuna boats from bases in foreign countries.

It is reported that the Japanese Frozen Tuna Export Association has tentatively set a quota of 12,000 tons for the Italian trade, 8,000 tons to be allotted on the basis of past performances, and 4,000 tons for special allotment. The Italian exports this year must all be on a barter basis, and the problem is that there seems little chance of arranging enough barter to cover the planned quantity of frozen tuna.

There is reportedly a strong possibility that the production quota for canned tuna for export to the United States will be set at 2.5 million cases for the 1959 export year. On the basis of demand, it is considered reasonable that this will be 65 percent white meat and 35 percent light meat, but it is doubtful that the raw material supply situation will make this ratio possible. Shipped exports (as opposed to landings of fish abroad from fishing boats) of frozen yellowfin tuna to the United States in 1959 have reportedly been set at 35,000 short tons. Discussions are being carried on over whether to sell the fish through individual exporters, as at present, or through a joint sales company. It is anticipated that the former method will be used, because of opposition from clipper operators to the joint sales company idea.

Landings of tuna in Central American and Caribbean ports for transshipment to United States packers reportedly have been hit by reject claims ranging as high as 30 or 40 percent. The high reject rate is mostly for the fillets, which are from large yellowfin.

One of the developments that is arousing great interest in tuna circles is a move by salmon and saury fishermen in northern Japan, particularly Hokkaido, to get permission from the Fisheries Agency to enter the mothership tuna fishery. The saury fishery seems to grow more unprofitable as catches grow bigger, so these fishermen are seeking permits that will enable them to spend a good part of the year fishing tuna. Two large companies are said to be interested in operating motherships, and Hokkaido salmon boat owners have set up a Hokkaido Tuna Fishery Association with about 60 boats that they would like to get into tuna mothership fleets. The number of salmon and saury boats that already have part-time tuna fishing licenses is reportedly 224, but the terms of their licenses would have to be changed in order to enable them to join tuna mothership operations. Last year tuna mothership fleets took about 15,000 short tons of fish, of which 12,000 were taken by the one large company's vessels and the balance by another company.

A Japanese tuna boat reported sighting the Soviet vessel Nora fishing tuna in the Caroline Islands. A Russian fleet was reported on the saury grounds off northern Honshu, and Russian boats were seen on the mackerel grounds west of Kyushu.

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ULTRASONICS USED TO LOCATE SALMON IN NORTH PACIFIC:

A transmitter and a receiver, which the Japanese suspend over the side of the vessel at a depth of 1.5 meters (about 5 feet), record the movement and the density of fish schools and the depths in the sea at which they occur. During daylight the fish were usually at depths between 30 and 50 meters (98-164 feet), but toward dusk they rose to shallow depths.

Fish schools concentrate in the deep-scattering layer--pelagic organisms concentrate in layers throughout all oceans at varying depths and rise toward the surface at night. The fish captured in that layer were satiated with Euphausia, small shrimp-like crustaceans. When the deep-scattering layer was near the surface, the fish catches improved and the water became less transparent. The large abundance of plankton, the passively floating or weakly swimming animal and plant life, caused the decline in transparency.

Japan (Contd.):

The Japanese believe their equipment, which they are trying to improve, will lead to improved fishing methods. If they can use this technique on a large scale, they will improve materially their salmon catch, without increasing the present expenditure of effort.

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VESSEL TO FISH FOR TUNA FROM ARGENTINA:

A Japanese fishing company is sending the Yoshino Maru to Argentina for tuna fishing.

The company, which is carrying on tuna fishing out of Argentina, received a report early in June that the fishing grounds off Argentina are good, with catches of around 1,000 kan (about 4 short tons) a day. The same company had earlier dispatched the 300-ton (gross) Eisei Maru to Argentina and because of its success the company is considering sending the 700-ton Yoshino Maru. The attitude of Argentine authorities was being checked and if favorable, the vessel was scheduled to sail in mid-July.

Tuna fishing in Argentina is carried on in the Atlantic from Mar del Plata. Yellowfin and bluefin tuna are landed there and used for canning to meet local requirements. Demand is said to be increasing.

Fishing arrangements with Argentina were initiated in the era of President Peron, but thereafter, because of political unrest they did not go smoothly. Last year around October the project finally started to function, and it is said that the Argentine government is adopting policies of positive aid to the fishery. (Nippon Suisan Shimbun, June 3, 1959.)

Korea

FISHERIES DEVELOPMENTS, MAY 1959:

A ceremony was held on May 12, 1959, at Pusan, Korea, to mark the formal transfer of one 80-ton purse-seine vessel and one 70-ton carrier, procured under the fisheries development project of the International Cooperation Administration to the new owner. These boats were the third and fourth received of seven fishing boats being built abroad under the fisheries program. These boats were commissioned and put to sea immediately. On May 25, 1959, the seiner was reported to have caught nearly 3,500 boxes of fish (about 100 tons) during the first 10 days at sea making it the high production boat by mid-June.

Following delay due to bad weather, shrimp fishing got under way along the south and west coast about mid-May and Pusan processors began receiving shipments shortly thereafter. The Central Fisheries Inspection Station reported that about 40,000 pounds of Korean east coast shrimp were frozen for export under the new inspection regulation between mid-March and May 1. Practically all of this amount has been shipped.

Malaya

JAPANESE-MALAYAN COMPANY TO PRODUCE FROZEN AND CANNED TUNA:

A Japanese fisheries company held its regular stock-holders' meeting on May 29 and discussed a report on a Malayan-Japanese company which is to be established at Penang. The company is a joint venture of the Japanese company and Chinese businessmen in Malaya. The meeting to establish the new concern was scheduled for the end of June in Penang.

The company will be capitalized at ¥60 million (US$167,000), of which the Malayans will invest 51 percent and the Japanese 49 percent. There will be 5 Japanese officers and four Malayans, the president to be Malayan. In addition to an existing cannery, freezing (5-ton capacity) and cold-storage (166-ton capacity) facilities are to be built within 8 months of the time the capital is paid in. Contracts to purchase fish will be made with 5 Japanese boats. Production plans call for landings of 1,621 tons of tuna for freezing and 1,188 tons for canning in oil. Exports of canned tuna to African and Asian countries and to Europe will be about 59,900 cases; 14,000 cases will be sold to the Malayan armed forces; and

Malaya (Contd.):

2,000 cases on the local market. Landings of about 400 tons will be made for the fresh and salted fish trade. (Nikkan Suisan Tsushin, May 30, 1959.)

Mexico

WEST COAST SHRIMP FLEET TIED UP OVER PRICE DISPUTE:

On May 16, 1959, a dispute over prices between fishermen's cooperatives and vessel owners on the West Coast of Mexico tied up the shrimp fleets in the various ports. The East Coast cooperatives, recognizing the difficulties the boat owners are undergoing, settled for a one year period ending May 15, 1960, with an increase to cover only the cost of social security. This amounts to 165 pesos a metric ton for large shrimp and 105 pesos for small. This is about US$12.00 and $7.64, respectively, a short ton with the break between large and small at 31-35 count headless.

The cooperative fishermen (the catching of shrimp in Mexico is restricted to fishermen belonging to cooperatives) on the West Coast are asking for a 25-percent increase. The boat owners are willing to concede an increase of 15 percent providing that one crew member is eliminated. The normal complement on West Coast of Mexico shrimp vessels is seven men and on the East Coast five.

At one stage of the negotiations the boat owners offered to sell all boats, shore installations, and transportation equipment to the cooperatives. However, agreement could not be reached as to the method of payment. (United States Embassy dispatch of May 21, 1959, from Mexico.)

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SHRIMP PRICE DISPUTE BEING SETTLED:

The dispute over the price to be paid Mexican shrimp fishermen on the West Coast during the 1959/60 season in open waters starting September 16 (season closed July 16 through September 15) appeared to be well on the way toward settlement late in May 1959. One organization with operations in Topolobampo and Culiacan, Sinaloa, and in Saline Cruze, Oaxaca, reached agreement with the cooperatives on May 22, 1959, and it was expected that similar agreements would soon be reached with the remaining West Coast cooperatives.

The agreement calls for a guaranteed headless shrimp price of 2,600 pesos (about US$208.00) a metric ton, and under current prices an additional 400 pesos (US$32.00) to be paid the fishermen.

If the market price for shrimp fluctuates, the fishermen will share at the rate of 15.4 percent in the fluctuations, with a guaranteed minimum price of 2,600 pesos. At present prices the fishermen will receive about US$43.92 more for each metric ton of headless shrimp landed--an increase over the 1957-59 fishermen's price of about 2 U. S. cents a pound.

In addition, the fishermen will be permitted to bring in one-half ton of fish each trip. The cooperatives plan on selling the fish in Mexico City, and other consuming centers at low prices, since no charges will be assessed for catching the fish.

Fishing circles are of the opinion that the same arrangements will be made by the remainder of the West Coast boat owners, and that the seven-day strike that tied up two-thirds of Mexico's shrimp fleet is now over.

Morocco

PROBLEMS IN MARKETING FISHERY PRODUCTS:

The separation of the Moroccan franc from the French franc and the inauguration of the European Common Market have caused difficulties for the Moroccan fishing industry. However, the marketing problem was pressing even before the separation of the franc because of the declining world prices for sardines, the high cost price for Moroccan products, and the stiffened competition from Portugal.

It is estimated that the separation of the franc is costing the canners 535 million francs (about US$1,009,000) this season. In addition, upon the inauguration of the European Common Market, the 10-percent reduction of custom duties was extended to other Organization of European Economic Cooperation countries so that Portugal, for example, gained 150 francs (US$0.30) per case over Morocco in certain European Common Market countries. France, because of her commitments toward the Common Market will probably be obliged

Morocco (Contd.):

to abolish the 12,000-ton duty-free quota for Moroccan canned fish, and should this happen, it is hard to see how the fishery industry could survive. The cost price of Moroccan sardines is 4,000 francs (US$8.16) per case. In France, because of the quota, the sale price is 6,000 francs (US$12.24), but outside France only 3,400 francs (US$6.94).

A bitter controversy has broken out between the canners and the frozen fish industry. The canners blame the latter for the marketing problem, claiming that frozen Moroccan sardines are canned in France and cut down the market for sardines canned in Morocco. The freezing industry believes that if it does not supply the fish, the Portuguese will and that the trouble with the canning industry is that their tins and oil are too expensive. It is pointed out that no great progress has been made since the export of beheaded frozen sardines was forbidden in 1958 and that 1.7 million cases of canned fish (about 1.4 million of which were sardines) remained unsold. An unsatisfactory compromise has been achieved and whole frozen sardines may now be exported in 5-kilogram (11-lb.) packages.

The boat-builders at Larache are idle and the northern fisheries are suffering from the loss of former markets in Spain. It has, in fact, been suggested that no new boats be built except to replace old ones so that there will be enough work for the existing fleet.

At Agadir, where over a hundred plants were once operating, 80 percent of the 1958 catch went into the manufacture of byproducts, fish meal, and fish oil. Because of the much lower price paid for sardines going to reduction plants--about 9 francs (about 0.8 U.S. cents) a kilo as compared to 28 francs (5.7 U.S. cents) for fish going to canneries--the fisherman's share of the profits went down from 245,000 francs (US$583) for the 1957 fishery to 204,000 francs (US$486) in 1958.

Exports of shrimp, having mounted to 200 metric tons in 1958, are now falling off sharply. Large amounts of Egyptian and Scandinavian shrimp have brought the Morrocan shrimp price down.

If the fishery industry should fail, not only would some 20,000 fishermen and related workers be unemployed, but also other industries would be vitally affected, particularly can makers and olive-oil producers.

Netherlands

FIRST FACTORYSHIP ACQUIRED:

The Netherlands fishing fleet will acquire its first factoryship soon. It is the Van Ronzalen, a German trawler which will be reconditioned by a shipbuilder in Ijmuiden and then sent to Rotterdam, which will be the ship's base.

The factoryship will have a processing plant capable of producing 20 metric tons of fish fillets a day. (Boletin de Informacion, Sindicato Nacional de la Pesca, April 1959, Madrid, Spain.)

Nicaragua

SHRIMP INDUSTRY GROWING:

Although shrimp fishing in Nicaragua slowed down during the first quarter of 1959, it continues to be a growing industry. One United States firm asked for a concession to fish off the Caribbean shore and another firm asked for a concession to fish off both the Caribbean and the Pacific shores.

At the same time a French company, which asked for a concession to grow oysters in Laguna de Perlas north of Bluefields, was granted free entry privileges under the Industrial Development Law to bring into the country all the machinery necessary to process and pack fish and fish products. (United States Foreign Service report of May 28 from Managua.)

Peru

EXPORTS OF PRINCIPAL MARINE PRODUCTS, JANUARY-APRIL 1959 AND YEAR 1958:

Exports of principal marine products by Peru during the first quarter of 1959 continued at a high rate. Comparable data for the first quarter of 1958 are unavailable except for fish meal. The fish meal exports of 51,058 metric tons January-April 1959 were 30.4 percent higher than the 39,152 tons exported January-May 1958 (United States Embassy in Lima, May 25, 1959).

Peruvian Exports of Principal Marine Products, Jan-April 1959 and Year 1958

Marine Products	Jan.-April 1959 1/		Year 1958 2/	
	Quantity	Value	Quantity	Value
	Metric Tons	US$ 1,000	Metric Tons	US$ 1,000
Fish meal	51,058	5,936	105,777	11,635
Fish (frozen, canned, etc.)	5,778	1,879	30,056	7,618
Sperm oil	3,749	481	7,352	1,103
Fish oil	1,301	129	1,643	193
Whale meal	998	117	1,295	127
Fertilizer (guano)	405	34	3/15,133	3/1,270
Whale oil	-	-	1,695	167
Total	63,289	8,576	162,951	22,113

1/ Values converted at rate of 26.40 soles equals US$1 for first quarter of 1959.
2/ Values converted at rate of 23.30 soles equals US$1 for year 1958.
3/ Quantity and value 9 mos. 1958.

Somalia

DEVELOPMENT OF TUNA FISHERY SHOWS PROMISE:

During the September 1958-May 1959 tuna fishing season, the tuna cannery at Candala, Somalia, packed over 16,000 cases, the largest pack since it has been in operation. The cannery at Habo, Somalia, after a shutdown of three years reopened in April 1959 and up to mid-May packed 2,182 cases of tuna. Most of the fish have been caught by primitive methods (hand-line fishing from canoes) by Somali and Arab fishermen as there is only one boat in the area equipped with long-line gear, loaned to the Candala cannery owner by the International Cooperation Administration (ICA). However, authority has just been received from ICA to proceed with the construction of two 27-foot Diesel-powered fishing boats for demonstration purposes. At the same time the ICA Fisheries Advisor to Somalia has started classes to train Somali fishermen in the use of long-line fishing gear and other modern fishing methods.

With these steps being taken in the modernization of fishing, there is every reason to believe that the catches can be greatly increased and production multiplied several or many times over. Almost all of the pack is now exported to Italy, but a very rough market survey indicates there are excellent marketing possibilities for tuna and other fish products in other European countries, including the European Common Market in which Somalia may become a member, as well as in the Middle East and Africa. A Food and Agriculture Organization survey report recommended that the fishing industry was in the No. 1 position for both raw material and sale possibilities. A full scale survey of the fisheries potential of Somalia is now under consideration.

It is believed that a survey team should include an oceanographer and a marine biologist in addition to a fishing expert. It is further recommended that the survey should include not only the 180-mile north coast of Somalia on the Gulf of Aden, but also the long (1,150 miles) east coast of Somalia on the Indian Ocean.

Union of South Africa

PILCHARD-MAASBANKER LANDINGS, JANUARY 1959:

The Union of South Africa's west coast pelagic shoal fish catch for January 1959 (the first month of the 1959 season) was 10,451 metric tons of pilchards, 49 tons of maasbanker (jack mackerel), and 6,139 tons of mackerel. The total catch was 16,639 tons, according to the Union's Division of Fisheries. These figures compare with 7,690 tons of pilchards, 150 tons of maasbanker, and 3,142 tons of mackerel in January 1958, and 4,551 tons of pilchards, 605 tons of maasbanker, and 3,267 of mackerel in January 1957.

The January catch this year yielded 3,039 tons of fish meal, 141,609 gallons of fish-body oil, 1,364,079 pounds canned pilchards and maasbanker. (The South African Shipping News and Fishing Industry Review, March 1959.)

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PILCHARD-MAASBANKER LANDINGS, FIRST QUARTER 1959:

The South African Division of Fisheries reports that the landings from the Cape West Coast pilchard-maasbanker fishery in January-March 1959 amounted to 76,191 short tons as compared with landings of 57,640 tons in January-March 1958. The first quarter 1959 pilchard-maasbanker landings were made up of 71,043 tons of pilchard and 5,148 tons of maasbanker or jack mackerel. In addition, the nonquota mackerel landings rose sharply to 22,843 tons or 743 tons more than the entire catch for 1958.

It was predicted that Cape West Coast landings of pilchards, maasbanker, and mackerel in 1959 may establish a new record. The best landings of those species occurred in 1952 when about 300,000 tons were landed. In 1958 a total of 298,800 tons was landed for processing into fish meal, fish oil, and canned fish.

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RESEARCH ON SPINY LOBSTERS PLANNED:

The Oceana group of South African fishing companies in May 1959 announced

Union of South Africa (Contd.):

plans to conduct its own research on the spiny lobster resources of the Cape West Coast. The research planned by this industry group of firms is expected initially to cost about £30,000-40,000 (US$84,000 to $112,000). A 67-foot fishing vessel will be modified to carry out the program for the benefit of the spiny lobster processors in Hout Bay, Lambert's Bay, Thorn Bay, Hondeklip Bay, and Port Nolloth.

The South African Division of Fisheries conducts extensive research on pelagic fish, but has not to date begun research on the spiny lobster in the Cape West Coast area. The Division, however, is conducting research on the spiny lobster in the Luderitz area.

U. S. S. R.

NEGOTIATING FOR FIVE NEW FACTORYSHIP TRAWLERS:

The Soviet Union is negotiating with a shipyard in Kiel, West Germany, for the delivery of five new factoryship trawlers, according to Dansk Fiskeritidende (May 22, 1959), a Danish fishery trade periodical. The five vessels will cost a total of about 75 million marks (US$17.9 million). Previously, the same shipyard delivered 24 factoryship trawlers of the Pushkin type to the Soviet Union.

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FISHING FLEET OPERATING IN BERING SEA:

A Soviet fishing fleet has been reported operating in the eastern waters of the Bering Sea. As of April 27, a substantial portion of the Soviet fleet, including about 40 vessels, was working approximately 100 miles north of Unimak Island. By mid-May, much of the Soviet fleet had moved northward to the area between Unimak and St Matthew Islands.

The Soviet fleet has been operating in waters along the Arctic ice flow and has been moving northward as the ice field gradually recedes. Apparently the fleet depends upon this ice field as a source of ice for preserving the catch, at least until it can be transferred from the fishing vessels to the large motherships.

There has been no evidence that the Soviets are using salmon fishing gear, nor is there evidence that the fleet is particularly interested in halibut. For the most part, the Soviet fleet appears to be operating entirely on bottom fish, paralleling very closely the operations of Japanese vessels in this area of the Bering Sea.

United Kingdom

CANNED TUNA PRICES, MAY 1959:

During May 1959, offerings of tuna or tuna-like fish on the British market were mainly bonito originating from Peru. Since the liberalization of canned salmon imports, sales of tuna have decreased and differences in c.i.f. quotations may be attributed to pressure on some of the canned fish importers to move stocks. Prices c.i.f. for one prominent brand early in May 1959 were as follows: solid pack in cottonseed oil (presumably bonito): 7-oz., 48 cans/case, 43s. (US$6.02) a case; 3½-oz., 48 cans/case, 28s. ($3.92) a case; another brand's prices were: 7-oz., 48 cans/case, 50s. 11d. ($7.13) a case; 3½-oz., 48 cans/case, 31s. 8d. ($4.43) a case. Japanese solid pack white-meat tuna 3½-oz., 48 cans/case, was offered at 35s. ($4.90) a case.

Wholesale prices for canned tuna published by a British trade journal in May 1959 were as follows: solid pack (fancy quality), 3½-oz., 96 cans/case, 95s. 9d. ($13.40) a case and 7-oz., 48 cans/case, 79s. 3d. ($11.09) a case, select 3½-oz., 96 cans/case, 100s. ($14.00) a case; and tunny in tomato sauce, 3½-oz., 14s. 2d. (1.98) a dozen cans. Retail prices: solid pack (fancy quality), 3½-oz., 1s. 2.5d. (17 U. S. cents) a can and 7-oz., 2s. (28 cents) a can; select, 3½-oz., 1s. 3d. (17.5 cents); tunny in tomato sauce, 3½-oz., 1s.6d. (21 cents) a can.

Canned tuna imported into United Kingdom enters under the heading "other canned fish" and exact figures on the imports

United Kingdom (Contd.):

of canned tuna and bonito are unobtainable. Total imports under that heading from January-November 1958 amounted to about US$3,572,800. Of that amount, Peru supplied US$1,498,000 and Japan supplied US$484,400. All of those imports are probably tuna because of restrictions on other imports included in the category.

* * * * *

IMPORT CONTROLS ON CANNED FISH: Controls on the import of many consumer goods from the Dollar Area were removed by the United Kingdom effective June 8, 1959. Included among the commodities freed of controls are canned fish, according to a news release transmitted by the United States Embassy in London (May 27, 1959). The British press release points out that the effect will be a further substantial reduction in discrimination in the operations of import controls against Canada, the United States, and the rest of the Dollar Area. Imports of canned fish in the future will receive the same treatment as imports from Western Europe, i.e. freedom from control.

Import controls on canned salmon only were removed by Britain on September 17, 1958.

FISH FLOUR

Research on the production of a neutral fish flour in South Africa is traced as far back as 1937. Two researchers investigated methods of producing a neutral fish flour which could be added to cereal starch foods, without influencing their taste or smell. One of the first issues of the South African Shipping News (February 1946) described the progress made and in 1951 the same publication reported that a completely neutral fish flour with a protein content of more than 85 percent had been produced from white fish.

Large-scale production of the flour might, however, have been affected by comparatively limited supplies of white fish meal and so for several years the South African Fishing Industry Research Institute worked on a process for producing the flour from the more abundant pilchard and maasbanker. This work was encouraged by the Union Government which hoped to increase the protein diet of South Africa's people by adding fish flour to bread and to mealie meal.

Eventually in September 1954 The South African Fishing News reported that the Fishing Industry Research Institute had developed a "commercially adaptable process for the production of fish flour from a cheap and abundant fish." A plant was installed in a factory at Dido Valley near Simonstown and soon a neutral fish flour, with a protein content of about 80 percent, was being produced on a commercial scale. Tests conducted by the South African Department of Nutrition showed that enriched bread could take up to eight percent of fish flour without having its taste, smell or color affected. This enriched bread, with about two percent fish flour, is now sold throughout the Cape Western Province and the Dido Valley plant has produced nearly 1,000 tons of neutral flour from pilchard and maasbanker meal.

FEDERAL ACTIONS

Department of the Interior

FISH AND WILDLIFE SERVICE

BRISTOL BAY ALASKA SALMON FISHING GEAR REGISTRATIONS ANNOUNCED:

The total number of units of gear registered for use in the salmon fishing districts of Bristol Bay were announced by the U. S. Bureau of Commercial Fisheries on June 22, 1959. As published in the Federal Register of June 23, the number of units registered by district as of 6 p.m. Friday, June 19, 1959, were as follows:

Kvichak-Naknek	150 units
Nushagak	293 units
Egegik	60 units
Ugashik	50 units

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FISHERY ATTACHE PACT SIGNED:

On May 5, 1959, Assistant Secretary Scott of the Department of State and Assistant Secretary Leffler of the Department of the Interior signed a document establishing a fisheries and minerals attache program.

The agreement spells out the responsibilities of each Department in selecting attaches, the duties of the attaches, and the methods for instructing attaches as to the types of reporting required from abroad on developments that affect the United States fishing and minerals industries.

At present, there are two fishery attaches--one in Mexico City as Regional Fisheries Officer for Latin America, and one in Tokyo as Fisheries Attache for Japan. The Bureau has requested that the Department of State establish four additional regional posts to cover other strategic fishing areas of the world. The posts recommended will be at the Oslo, London, Lisbon, and Bangkok Embassies.

Treasury Department

BUREAU OF CUSTOMS

DECISIONS ON AIRTIGHT CONTAINERS MAY INCREASE IMPORT DUTY ON SOME PACKAGED FISHERY PRODUCTS:

Recent decisions by the U. S. Bureau of Customs hold that frozen rainbow trout and fish fillets, packaged in a certain manner, are packed in airtight containers, and therefore dutiable under Tariff Paragraph 718(b) at 12-1/2 percent ad valorem. Previously they were dutiable at a 1/2 cent a pound in the case of whole frozen trout, and 1-1/2 cents a pound for frozen fillets other than groundfish, under Tariff Paragraph 717. These two decisions may be applied to frozen fish fillets and other products that are imported in cellophane, polyethylene, and cryovac, and other modern packaging materials. The decisions read as follows:

Treasury Decision 54826 (47): Fresh or frozen trout, beheaded or eviscerated or both, but not further advanced, are classifiable under 718(b), Tariff Act of 1930, when packed in airtight containers (whether polyethylene, cellophane, cryovac bags, or other containers completely sealed so as to be impermeable to air), weighing with their contents not over 15 pounds each, or if not in airtight containers as fresh-water fish under 717(a).

Treasury Decision 54802(13): Bag made from a sheet consisting of a layer of cellulose nitrate-coated cellophane and a layer of polyethylene in such a way that the inside of the bag is polyethylene only, three edges joined by heat sealing, a fish fillet inserted, and the top also heat-sealed, is an airtight container for the purposes of 718(b). If the same fillet is placed in an open container or "boat" overwrapped in cellophane and waxed paper and sealed in such a way that air can pass in and out, the overwrapped "boat" is not an airtight container for the purposes of 718(b).

The two decisions did hold that the products submitted were in airtight containers and therefore that the containers were impermeable to air. The trout was packed in cryovac; the fillets were packed in what is called a poly-cell bag or cellulose-film bag. The classification by the Bureau of Customs is being protested by the American Seafood Distributors Association and a determination as to impermeability to air will in due course be made by the Customs Court in the future. In the meantime, packers and importers of all fishery products, using the modern packaging methods, must make a decision on future shipments, shipments on the water, purchase contracts, etc., otherwise they will find that what they thought would be dutiable at from a 1/2 cent to 1-1/2 cents a pound is going to be assessed at the rate of 12-1/2 percent ad valorem.

The Bureau of Customs makes no statement of a criteria for impermeability to air. They provide no additional information on the decisions than is contained in the summaries. They will decide each case as it is presented. Possible interpretations of criteria are as follows:

1. All cryovac containers and all containers packed under vacuum will be considered to be airtight containers, and dutiable at 12-1/2 percent.

2. The heat-sealed polyethylene bag, not packed under vacuum, and not of an abnormal thickness, and consisting of one layer only, that is used by so many fishery firms, will not be considered to be an airtight container, and dutiable at the lower rate.

3. A bag or sack made of a combination of materials, such as cellophane and polyethylene, or made from a sheet of more than one layer or of an abnormal thickness, whether or not packed under vacuum, will be considered to be an airtight container, and dutiable at the 12-1/2 percent rate.

The determination of airtightness is made as to the immediate container--the container that immediately surrounds the fish. In the case of bagged trout or bagged fillets, which are in turn packed in a master carton, the bag is the immediate container. That the master carton is cardboard, overwrapped with cellophane, is not important in this determination, if within the master carton are individual containers. The one-pound fillet packages, packed in a cardboard box overwrapped in cellophane, will probably be considered nonairtight.

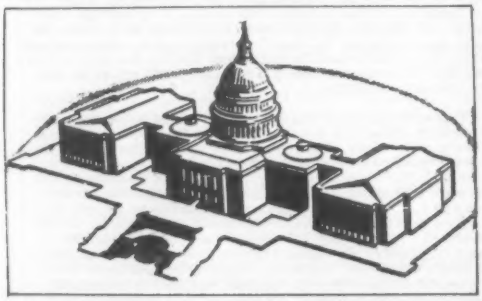
In a discussion with Bureau of Customs officials on June 11, 1959, the National Fisheries Institute was advised that, "contrary to general opinion" the Bureau's recent decisions regarding airtight containers made from films (polyethelene, cellophane, cryovac, etc.) will not adversely affect the duty classification of fishery products to the extent believed by the industry.

Fishery products packaged in film of single thickness is not considered airtight by the Bureau of Customs, nor is multiple thickness packaging considered airtight if the bags are NOT heat-sealed. If the open end of a bag is stapled, for instance, it is not considered airtight.

Eighty-Sixth Congress

(First Session)

Public bills and resolutions which may directly or indirectly affect the fisheries and allied industries are reported upon. Introduction, referral to



committees, pertinent legislative actions, hearings, and other actions by the House and Senate, as well as signature into law or other final disposition are covered.

ALASKA OMNIBUS ACT: The President on June 25 signed into law H. R. 7120, to amend certain laws of the United States in light of the admission of the State of Alaska into the Union (P. L. 86-70). The legislation is largely technical providing changes in Federal laws, necessary because of the change in Alaska's status from Territory to a State, eliminating inappropriate references in Federal statutes. Other provisions are substantive, terminating certain special Federal programs in Alaska, and enabling participation by Alaska in other programs on "an equal footing with other States." The bill was drafted by the executive agencies concerned with the administration of Federal responsibilities in Alaska. Two provisions are of particular interest to fisheries interests: (1) Alaska will assume jurisdiction over its fish and wildlife resources the first day of the calendar year following expiration of 90 calendar days (instead of 90 legislative days) after certification by the Secretary of the Interior that the Alaska State Legislature has made "adequate provision for the administration, management, and conservation of the fish and wildlife resources of Alaska in the broad national interest." (The Secretary of the Interior made the certification on April 20, 1959. The transfer, therefore, will be effective January 1, 1960, unless Congress adjourns before the 90 days provided for in the bill.); (2) authorizes the President to transfer to Alaska without reimbursement property used in a function taken over in whole or part by the State.

BONNEVILLE REORGANIZATION ACT OF 1959: A draft of proposed legislation entitled "A bill to amend the Bonneville Project Act, as amended," was transmitted with an accompanying paper from the Under Secretary of the Interior to both Houses of Congress on June 18; referred to the respective Senate and House Committees on Public Works. The proposed reorganization, among other things, would provide that the Bonneville Power Corporation set up would try to coordinate its programs with fish and wildlife preservation and propagation.

The Subcommittee on Flood Control of the Senate Committee on Public Works conducted hearings July 15, 16, and 17 on S. 1927, to establish a Bonneville Power Corporation. Among other purposes, the bill provides that the Corporation would be responsible for carrying out the policies of the Federal Government for comprehensive multiple-purpose water resources development and to coordinate its programs in relationship to other agencies including those for fish and wildlife preservation and propagation.

COLUMBIA RIVER FISHERIES INVESTIGATION: The House Committee on Appropriations on June 2 ordered favorably reported H. R. 7509, the Public Works Appropriation Bill 1960 Fiscal (House Report No. 424). Included in the Committee recommendations were appropriations for the Corps of Engineers and Bureau of Reclamation for water resource construction programs.

The House Committee, however, rejected requests of Columbia River state conservation agencies and private conservation interests for an appropriation of $450,000 to begin an intensified program to resolve the problem of preserving and restoring fisheries in the face of an expanded dam

building program which is rapidly destroying remaining runs of sea-run fish. The fishery program, which had been developed and approved by the Columbia Inter-Agency Committee, proposes comprehensive research into techniques and methods for perpetuating these sport and commercial fisheries. Funds made available under it would be used by State fish and game agencies and the U. S. Fish and Wildlife Service.

The Committee questioned increases requested by the Fish and Wildlife Service for its cooperative Federal-State Columbia fisheries development program. It approved an appropriation of $1.2 million for construction and $1.7 million for operation of facilities to compensate for fisheries losses that result from river development while stating in its report that it ". . . has no intention of permitting the Federal water resources construction program in the Northwest to become the vehicle through which this section of the country enjoys more than its reasonable share of federal funds available for regular fish and wildlife preservation work. . ."

The Committee also repeated its argument that river basin studies of the Fish and Wildlife Service should be financed by transfer funds from the Corps of Engineers and Bureau of Reclamation, but neither the Bureau or the Corps included monies in their budget requests for these purposes.

H. R. 7509 passed the House June 9. The Senate Appropriation Committee reported H. R. 7509 on July 8 (Senate Report No. 486). The bill was passed by the Senate July 9. The Corps of Engineers was granted planning money for four dams within the Snake River drainage which have been strongly opposed by conservationists and state and federal wildlife agencies. This includes: $770,000 for Bruce's Eddy on the North Fork of the Clearwater River; $450,000 for Little Goose lock and dam, $800,000 for Lower Monumental lock and dam and $200,000 for Lower Granite lock and dam, all on the lower Snake River. Each of these projects will impede movements of sea-run Chinook salmon and steelhead trout into spawning waters of the Middle Snake River System. Except for the funds recommended for the Lower Granite project, the same amounts were approved in the version of the bill that passed the House June 9.

The Senate voted appropriations of $750,000 to finance River Basin Studies programs of the Bureau of Sport Fisheries and Wildlife. Earlier the Bureau of the Budget had requested that $836,400 be provided for this purpose through direct appropriation in the Department of Interior and Related Agencies Appropriation Bill. But following the rejection of this request by both the House and Senate, the restoration of the $750,000 in the Public Works Bill represents the recovery of a substantial part of the funds that are needed to determine the effects of river development programs on fish and wildlife and to compensate for losses to these resources. Language, written into the bill in three different places, specifically earmarks funds for Fish and Wildlife Service studies, investigations and reports: $500,000 is provided under the "Coordination Act Studies" general construction item for the Corps of Engineers; $50,000 is designated under the general investigations item for the Corps of Engineers and $200,000 under general investigations for the Bureau of Reclamation. In each place language in the bill provides that "wildlife conservation shall receive equal consideration and be conducted with other features of water resources development programs."

The Senate also recommended that $280,000 be included in the Bureau of Reclamation item for fish and wildlife studies in connection with the Missouri Basin Project. This was the amount recommended by the Budget Bureau but denied by the House which, along with the $750,000 for other River Basin Studies programs, is subject to approval by House Conferees in House-Senate Conference Committee since the House bill did not contain these funds.

The Senate approved the budgeted figures of $1.2 million for construction, and $1.7 million for operation and maintenance of the Lower Columbia River Fish Sanctuary program, the same amounts as provided in the House bill. No funds were included in the measure to launch the proposed intensive research program of the Columbia Inter-Agency Committee on the problem of preserving and restoring Columbia River fisheries in the face of expanded dam-building activities which are rapidly destroying remaining runs of sea-run fish.

Senate asked for a conference July 9.

House Report No. 424, Public Works Appropriation Bill, 1960 (June 2, 1959, 86th Congress, 1st Session, Report of the House Committee on Appropriations to accompany H. R. 7509, a bill making appropriations for the civil functions administered by the Department of the Army, certain agencies of the Department of the Interior, and the Tennessee Valley Authority, for fiscal year ending June 30, 1960), 32 pp., printed. Contains budget estimates and Committee recommendations. Included are certain tabulations of projects for which funds are recommended for both planning and actual construction and reductions in budget estimates, comparative statement of appropriations for 1959, estimates for 1960, and Committee recommendations.

Senate Report No. 486, Public Works Appropriation Bill, 1960 (July 8, 1959, 86th Congress, 1st Session, Report of the Senate Committee on Appropriations to accompany H. R. 7509, a bill making appropriations for civil functions administered by the Department of the Army, certain agencies of the Department of the Interior, and the Tennessee Valley Authority), 49 pp., printed. Contains budget estimates, House allowances, and Committee recommendations. Included are tables showing by State, rivers, harbors, and flood control construction projects; comparative statement of appropriations for 1959, estimates for 1960, allowances by House, and Senate Committee recommendations.

COLOR ADDITIVES IN FOODS: H. R. 7624 (Harris), a bill to protect the public health by amending the Federal Food, Drug, and Cosmetic Act so as to authorize the use of suitable color additives in or on foods, drugs, and cosmetics, in accordance with regulations prescribing the conditions (including maximum tolerances) under which such additives may be safely used; to the Committee on Interstate and Foreign Commerce; introduced in House June 9. The proposed legislation would expedite the testing of colors to determine safe levels of use by requiring color

manufacturers to do the appropriate research and to submit the results to the Food and Drug Administration. All types of color additives would be subject to the safety requirements of the new law, not merely "coal-tar colors" as under present regulations. The proposed bill would replace the present "coal-tar color" provisions in the Federal law enforced by the Food and Drug Administration and was introduced as a regulatory measure to insure safe use of color additives in foods, drugs and cosmetics.

Also S. 2197 (Hill and Goldwater); to the Committee on Labor and Public Welfare; introduced in Senate June 17. Identical to H. R. 7624.

DOGFISH SHARK ERADICATION: H. R. 7759 (Pelly), a bill to amend the act providing for a program to investigate and eradicate the predatory dogfish sharks on the Pacific coast in order to expand such a program; to the Committee on Merchant Marine and Fisheries; introduced in House June 16. Similar to S. 1264 and related bills previously introduced which provide for extension and expansion of the dogfish shark eradication program on the Pacific Coast, but while S. 1264 provides for an incentive payment for dogfish, H. R. 7759 provides for finding ways and means of eradicating or controlling dogfish.

H. R. 7759 provides for determinations of the effects of dogfish removal upon commercial and noncommercial species of fish, the level of fishing intensity required to reduce depredations of these sharks on the fishing grounds, locations of their concentrations and migration routes, the value of chemical repellents as control agents, and possible commercial uses of the dogfish shark that are killed as a result of the control program. Chartered vessels would be used in these experimental studies. Cooperation with Canada also would be sought.

Dogfish Shark Eradication: Hearings May 22, 1959, before the Merchant Marine and Fisheries Subcommittee, Senate Committee on Interstate and Foreign Commerce, 86th Congress, 1st Session, on S. 1264 (a bill to amend the Act providing for a program to eradicate the dogfish shark on the Pacific coast in order to expand such program), 46 pp., printed. Contains purpose and provisions of the Bill, legislative background, testimony, and recommendations by State, Federal, and industry representatives. Also includes Pacific Coast Dogfish Shark Committee's review report "The Menace of the Dogfish Shark on the Pacific Coast," with accompanying tables, illustrations, figures showing areas of concentrations, and Committee recommendations.

The Senate Committee on Interstate and Foreign Commerce on June 17 ordered favorably reported S. 1264, to amend the Act providing for a program to eradicate the dogfish shark on the Pacific coast in order to expand such program, with amendments (S. Rept. 411). The bill amends the Act entitled "An Act authorizing and directing the Secretary of the Interior to investigate and eradicate the predatory dogfish sharks to control the depredations of this species on the fisheries of the Pacific coast, and for other purposes," approved September 2, 1958 (72 Stat. 1710). Would extend the program from a "four year" to a "five year" period; would provide incentive payments to fishermen with respect to dogfish shark carcasses (not to exceed $15 a ton) or dogfish livers (not to exceed 15 cents a pound); and increases funds to implement the program from $95,000 to $325,000.

Senate Report No. 411, Bounties on Dogfish Sharks (June 22, 1959, 86th Congress, 1st Session, Report of the Senate Committee on Interstate and Foreign Commerce to accompany S. 1264), 7 pp., printed. Contains purpose and provisions of the bill, discusses sharks, predator control, and gear damage; indicates proponents and opponents, appropriations; presents agency comments and changes in existing law.

H. R. 7891 (Westland) introduced in House June 22; similar to S. 1264.

S. 1264 Amendments, intended to be proposed by Senator Bush to bill S. 1264 (Magnuson), to amend the Act providing for a program to eradicate the dogfish shark on the Pacific coast in order to expand such a program; ordered to lie on the table and to be printed; introduced in Senate June 23. Would provide amendments to S. 1264 to expand the dogfish shark eradication to include a 1-million-dollar program for the eradication or control of starfish in Long Island Sound and adjacent waters.

The Senate on July 6 passed with amendments and cleared for the House S. 1264, to expand the program to eradicate the dogfish shark in Pacific coastal waters.

As passed by the Senate the dogfish shark eradication provisions were passed without amendment to the bill as reported from the Committee on Interstate and Foreign Commerce (S. Rept. No. 411). The Senate agreed to add as an amendment a new section to the bill providing for a 1-million-dollar program for the eradication or control of starfish and to amend the title of the legislation to read: "A bill to amend the Act providing for a program to eradicate the dogfish shark on the Pacific coast in order to expand such program, and to provide for the development and carrying out of an emergency program for the eradication of starfish in Long Island Sound and adjacent waters."

DUMPING RESTRICTIONS IN COASTAL WATERS: H. R. 8058 (Dorn), a bill to aid navigation and protect the fishing industry by prohibiting the dumping of certain materials in the coastal navigable waters of the United States; to the Committee on Public Works; introduced in House July 1. Provides amendments to the Oil Pollution Act of 1924, as amended, to prohibit the discharge of ferrous sulfate, ferric hydroxide, ferric oxide, or sulfuric acid into or upon the coastal navigable waters from any vessel, and for other purposes.

DUMPING RESTRICTIONS IN NEW YORK HARBOR AND ADJACENT WATERS: H. R. 8078 (Dorn), a bill to aid navigation and protect the fishing industry in waters adjacent to New York City by prohibiting the dumping of certain materials in such waters; to the Committee on Public Works; introduced in House July 1. Provides amendment to the Act entitled "An Act to prevent obstructive and injurious deposits within the harbor and adjacent waters of New York City, by dumping, or otherwise, and to punish and prevent such offenses," approved June 29, 1888, as amended (33 U. S. C., sec. 441).

Would prohibit the placing, discharging, or depositing by any process or in any manner of (1) refuse, dirt, ashes, cinders, mud, sand, dredgings, sludge, acid or any other matter of any kind, other than that flowing from streets, sewers, and passing therefrom in a liquid state, in the tidal waters of the harbor of New York, or its adjacent or tributary waters, or in those of Long Island Sound, within the limits which shall be prescribed by the supervisor of the harbor; or (2) of ferrous sulfate, ferric hydroxide, ferric oxide, or sulfuric acid, other than that flowing from streets, sewers, in waters with respect to which a permit for the discharge overboard of oil or water containing oil would not be granted by the supervisor of the harbor, is strictly forbidden. The bill further provides for penalties consisting of fines, imprisonment, or both for violation. One-half of any fine imposed shall be paid to the person or persons giving information leading to conviction.

FISHERIES ASSISTANCE ACT OF 1959: The Subcommittee on Fisheries and Wildlife of the House Committee on Merchant Marine and Fisheries on July 8 met in executive session in consideration of H. R. 5421, a bill to provide a program of assistance to correct inequities in the construction of fishing vessels and to enable the fishing industry of the United States to regain a favorable economic status, and for other purposes.

FISH HATCHERIES: The House Committee on Merchant Marine and Fisheries on July 9 ordered favorably reported to the House H. R. 2398, to provide for the establishment of a fish hatchery in northwestern Pennsylvania (H. Rept. No. 654).

FISHERY PRODUCTS INCLUDED IN FOOD-ALLOTMENT PROGRAM: Food Distribution Programs: Hearings June 4, 5, and 8, 1959, before a Subcommittee of the Senate Committee on Agriculture and Forestry, 86th Congress, 1st Session on S. 489, S. 585, S. 663, S. 862, S. 1884, and S. 2098. (Bills to facilitate the distribution of surplus food products to needy families in the United States, to safeguard the health, efficiency, and morale of the American people, to promote the full use of agricultural resources, and for other purposes), 225 pp., printed. Contains purpose and provisions of bills, statements, reports, and recommendations of representatives of Government and industry; individual views and comments on legislation; and various tables and charts. S. 585 provides for inclusion of fish among items in "basic food-allotment" provisions of the program.

FISHING VESSEL CONSTRUCTION SUBSIDIES: S. 2338 (Engle and Magnuson), a bill to provide a program to correct inequities in the construction of fishing vessels and to enable the fishing industry of the United States to regain a favorable economic and competitive status, and for other purposes; to the Committee on Interstate and Foreign Commerce; introduced in Senate July 7. Provides for a differential subsidy in the construction of new fishing vessels of up to 33⅓ percent, and in exceptional cases up to 50 percent. Would also provide authority to the Secretary of the Interior to acquire obsolete or inadequate fishing vessels in connection with construction of a new replacement vessel. Related to H. R. 5421 and bills previously introduced which, among other purposes, provide for fishing vessel construction subsidies.

The Subcommittee on Merchant Marine and Fisheries of the Senate Committee on Interstate and Foreign Commerce July 9 conducted hearings on S. 2338.

FISHING VESSEL MORTGAGE INSURANCE FUND ACT: S. 2342 (Magnuson, Smathers, and Engle), a bill creating a Federal Fishing Vessel Mortgage Insurance Fund, and for other purposes; to the Committee on Interstate and Foreign Commerce; introduced in Senate July 8. Would create a Federal Fishing Vessel Mortgage Insurance Fund which shall be used by the Secretary of the Interior as a revolving fund for the purpose of carrying out the ship mortgage provisions of title XI of the Merchant Marine Act, 1936, as amended, as it applies to fishing vessels under the Fish and Wildlife Act of 1956 (70 S. T. 1120). Further provides that if at any time funds are not sufficient to pay any amount the Secretary of the Interior is required to pay on ship mortgage insurance on fishing vessels he may issue notes or other obligations to the Secretary of the Treasury as may be necessary.

FISH AND WILDLIFE AID THROUGH EQUIPMENT TRANSFER: H. R. 7730 (McIntire), a bill to amend section 203 of the Federal Property and Administrative Services Act of 1949 to provide that surplus personal property of the United States may be donated to the States for the promotion of fish and wildlife management activities, and for other purposes; to the Committee on Government Operations; introduced in House June 15. Similar to H. R. 7190 and related bills previously introduced which provide for change in existing laws to include State Fish and Game Departments among State agencies eligible for receipt by transfer of surplus Federal Government property and equipment for use in furthering their wildlife conservation, restoration, and educational objectives.

Also H. R. 7904 (Derwinski) introduced in House June 23, and S. 2270 (Gruening) introduced in Senate June 24; to the respective House and Senate Committees on Government Operations. Similar to H. R. 7190 and related bills previously introduced.

Special Subcommittee of the Senate Committee on Government Operations scheduled hearings to begin on July 29 on bills providing for expansion of the donable property program authorized under the Federal Property and Administrative Services Act of 1949, to other public agencies or organizations. Includes legislative bills which would include State Fish and Game Departments among agencies eligible for receipt by transfer of surplus Federal Government property and equipment for use in furthering wildlife conservation, restoration, and educational objectives.

FISH AND WILDLIFE COOPERATIVE TRAINING UNITS: The Subcommittee on Fisheries and Wildlife Conservation of the House Committee on Merchant Marine and Fisheries held hearings July 1 on H. R. 5814 and related bills providing for cooperative unit programs of research, education, and demonstration between the Federal Government, colleges and universities, the several States and Territories, and private organizations, and for other purposes.

FOOD MARKETING: The Chairman of the Federal Trade Commission on June 29 transmitted to the Congress, pursuant to law, an interim report on "Economic Inquiry into Food Marketing" (with accompanying papers); referred to the respective House and Senate Committees on Interstate and Foreign Commerce.

GULF COAST FLORIDA SHRIMP BOAT HARBORS SURVEYS: A letter from the Secretary of the Army was presented in the House on June 23, transmitting a letter from the Chief of Engineers, Department of the Army, dated May 29, 1959, submitting a report, together with accompanying papers and illustrations, on a review of reports on and surveys of Gulf Coast shrimp boat harbors in Florida, requested by resolutions of the Committee on Rivers and Harbors, House of Representatives, and from the Committee on Public Works, U. S. Senate, adopted June 28, 1946, and February 14, 1950. Also submitted in response to five other congressional authorizations listed in the report (H. Doc. No. 183); referred to the Committee on Public Works.

IMPORTS OF POLLUTED SHELLFISH PROHIBITED: H. R. 7754 (Colmer), a bill to amend the Public Health Service Act to provide for certain investigations and studies by the Surgeon General of the United States; to the Committee on Interstate and Foreign Commerce; introduced in House June 16. Provides for investigations and studies of sanitation control maintained by foreign countries relating to harvesting and preparation of shellfish for the purpose of determining whether such controls meet the minimum standards prescribed for shellfish shipped in interstate commerce in the United States. Imports of shellfish from countries which fail to meet the minimum sanitary controls would be prohibited. The Surgeon General would promulgate regulations, establish procedures relating to sanitary control, and make available the names of foreign countries which comply with prescribed standards.

INSECTICIDES EFFECT UPON FISH AND WILDLIFE: The Subcommittee on Fisheries and Wildlife Conservation of the House Committee on Merchant Marine and Fisheries held hearings July 1 on H. R. 5813 and related bills dealing with the effect of insecticides, herbicides, fungicides, and other pesticides upon fish and wildlife and for other purposes.

INTERIOR DEPARTMENT APPROPRIATIONS: The President on June 23, 1959, signed into law H. R. 5915, fiscal 1960 appropriations for the Department of the Interior, and related agencies (P. L. 8660). Included are funds for the Fish and Wildlife Service and its two Bureaus.

INTERSTATE TRANSPORTATION OF FISH: The House Committee on Merchant Marine and Fisheries on July 9 ordered favorably reported to the House H. R. 5854, a bill to clarify a provision in the Black Bass Act relating to the interstate transportation of fish, and for other purposes (H. R. 653). Provides a technical amendment to the Black Bass Act clarifying that only shipment of legally taken fish is covered by the Act.

LAND TRANSFER: S. 2211 (Butler), a bill to provide for the conveyance to the State of Maryland of a tract of land located on the campus of the University of Maryland, College Park, Maryland, which was previously donated by the State of Maryland to the United States; to the Committee on Interior and Insular Affairs; introduced in Senate June 18. Involves Federal lands exclusive of that portion on which the Bureau of Commercial Fisheries Technological Laboratory is located.

MARINE MAMMALS PROTECTION ON HIGH SEAS: H. R. 8164 (Saylor), a bill for the protection of marine mammals on the high seas, and for other purposes: to the Committee on Merchant Marine and Fisheries; introduced in House July 9. Provides for protection of walrus, polar bear, and sea otter on the high seas for conservation, management, and other purposes.

OCEANOGRAPHY: S. Res. 136 (Magnuson, Engle, and Jackson) relative to research on oceanography and the report of the Committee on Oceanography to the President; to the Committee on Interstate and Foreign Commerce; introduced in Senate June 22, 1959.

Whereas expanded studies of the oceans and the ocean bottoms at all depths are vital to defense against enemy submarines, to the operation of our own submarines with maximum efficiency, to the rehabilitation of our commercial fisheries and utilization of other present or potential ocean resources, to facilitating commerce and navigation, and to expand our scientific knowledge of the waters covering 71 per centum of the earth's surface, life within these waters, and phenomena which affects climate and weather; and

Whereas several other nations, particularly the Union of Soviet Socialist Republics, are presently conducting oceanic studies of unprecedented magnitude on a worldwide basis, utilizing larger, more numerous, and more modern ships and more scientific and supporting personnel than ever before; and

Whereas a Committee on Oceanography, comprised of eminent scientists from universities and nongovernmental institutions, appointed by the National Academy of Sciences-National Research Council, has prepared a report outlining objectives and recommending a comprehensive program of oceanographic research to be carried out at nominal cost over a period of ten years; and

Whereas the Office of Naval Research of the Department of the Navy, observing that there has been no effort to improve the Nation's research fleet in the past fifteen years, and that there is need for more oceanographic scientists, laboratories, specially designed ships and shore facilities, has prepared a report recommending a ten-year, long-range program for oceanographic research which has been approved by the Chief of Naval Operations; and

Whereas the Coast and Geodetic Survey of the Department of Commerce, directed by statute to conduct hydrographic surveys, seismological investigations, magnetic and gravimetric observations, and other scientific operations, but restricted generally to coastal waters and limited in its work in these waters by obsolescence of its research ships, has drawn up plans to rehabilitate its scientific vessels and broaden the area in which it can operate, subject to departmental and Bureau of the Budget approval; and

Whereas the Bureau of Commercial Fisheries of the Fish and Wildlife Service of the Department of the Interior, faced with a drastic diminution of a valuable food supply and resource and an actual decline of ships and facilities for fisheries exploration and research at a time when Soviet Russia, Communist China, Japan, and many other nations are expanding fisheries research intensively, has a plan, which still waits departmental and budget approval, to replace its present small and overage vessels over a ten-year period: Now, therefore, be it

Resolved, That the Senate--

(1) commends the report of the Committee on Oceanography to the President, the Bureau of the Budget, and to the heads of the five departments and nine agencies which would participate in the ten-year program of oceanographic research recommended by the Committee, for their study and consideration with a view to overcoming this Nation's lag in this scientific field, and urges their support of a comprehensive plan that will assure the United States permanent leadership in oceanographic research;

(2) commends the programs of the several agencies for rehabilitating their research facilities and enlarging their oceanographic activities to the President and the Bureau of the Budget for like study and consideration with the object of developing a well-balanced and coordinated expansion of scientific effort in this vital field;

(3) concurs in the recommendations of the Committee on Oceanography that--

(a) basic oceanographic research be immediately expanded and at least doubled within the next ten years;

(b) in the field of applied research fisheries exploration be intensified, migratory patterns investigated, greater attention given to genetics of fish and other marine organisms, biological surveys augmented utilizing new devices, a program on diseases and other toxic effects in the marine environment established, comprehensive studies made of the economic and legal aspects of commercial fisheries, especially in relation to other industries, and research stimulated on the nature of organisms in the sea on which marine life of commercial or sports value feeds;

(c) training of more oceanographic scientists in private educational and research institutions be encouraged and facilitated by the National Science Foundation and the Office of Education with the object of doubling the number of oceanographers at the doctor of philosopy level during the next ten years;

(d) systematic ocean-wide and ocean-deep surveys be conducted by the Coast and Geodetic Survey and Hydrographic Office, Bureau of Navigation, Department of the Navy, to develop much broader knowledge of depths, salinity, temperature, current velocity, wave motion, magnetism and biological activity;

(e) research fleets of the various agencies and institutions engaged in basic or applied oceanographic research, of which most of the vessels are old and obsolete, be replaced by modern ships adapted to ocean-wide scientific studies and furnished with advanced scientific equipment, and that the number of ships be increased 90 per centum within the next ten years;

(f) shore facilities commensurate with an expanded program of basic research be constructed in order to derive maximum knowledge from observations and collections made at sea;

(g) development and utilization of deep-diving manned submersibles be expedited to facilitate maximum accomplishments in both basic and applied oceanographic research at all depths;

(h) mineral research be undertaken on the ocean floor with a view to present or ultimate utilization of the untapped resources that lie beneath the ocean; and

(i) extensive scientific investigations be made on the effects of radioactivity in the oceans including the genetic effects of radiation upon marine organisms, the inorganic transfer of radioactive elements from seawater to the sediments, and the circulation and mixing processes which control the dispersion of introduced contaminants in coastal and estuarine environments and in the open ocean;

(4) recommends that in order to coordinate the programs of the various agencies some method of interagency cooperation should be developed, possibly through an Oceanographic Research Board or Commission; and

(5) recommends that cooperation between the United States and other nations in oceanographic research and exchange of data should be considered on a carefully supervised and reciprocal basis.

OYSTER INDUSTRY ASSISTANCE: H. R. 8060 (Glenn), a bill to authorize the Secretary of the Interior to make loans to certain producers of oysters, and for other purposes. Also identical bills H. R. 8064 (Johnson of Maryland), H. R. 8065 (McDowell), and H. R. 8079 (Downing); all to the Committee on Merchant Marine and Fisheries; all introduced in House July 1. The bills authorize the Secretary of Interior to make loans to oyster producers in any area where excessive mortality of oysters has endangered the economic stability of the oyster industry, and caused a need for credit among producers, which is not readily available from private or public sources on reasonable terms. It provides for a rate of interest not to exceed 3 percent and on such general terms as the Secretary shall prescribe for any area. The bills also provide that the Secretary may acquire oyster brood stock, which possesses some resistance to causative agent of such mortality, and furnish the oyster producers in such area, resultant seed oysters for the propagation of new oysters, which will not be subject to such excessive mortality.

PACIFIC MARINE FISHERIES COMMISSION: The Chairman of the Pacific Marine Fisheries

Commission transmitted to the Congress, pursuant to law, a report of that Commission for the year 1958 (with accompanying papers); presented in the House June 26, referred to the Committee on Merchant Marine and Fisheries; presented in the Senate June 29, referred to the Committee on Interstate and Foreign Commerce.

PRICE DISCRIMINATION ENFORCEMENT OF ORDERS: The House Committee on the Judiciary on June 25 ordered favorably reported S. 726, an act to amend section 11 of the Clayton Act to provide for the more expeditious enforcement of cease and desist orders issued thereunder, and for other purposes; with amendment (H. Rept. No. 580); referred to the Committee of the Whole House on the State of the Union.

House Report No. 580, Finality of Clayton Act Orders (June 26, 1959, 86th Congress, 1st Session, Report of the House Committee on the Judiciary together with individual comments to accompany S. 726), 22 pp., printed. The report presents the purpose of the bill as amended, reasons for the legislation, sectional analysis, and changes in existing law. The appendix contains recommendations of several Government departments and individual comments.

The House on July 6 passed S. 726, to provide for the more expeditious enforcement of cease-and-desist orders issued under the Clayton Act (amended). The legislation implements the enforcement procedures of the Clayton Act by making applicable the present Federal Trade Commission Act enforcement provisions against price discrimination, tying arrangements, mergers, and interlocking directorates.

Finality of Clayton Act Orders (Hearings, May 27 and 28, 1959, before the Antitrust Subcommittee No. 5 for use by the Committee on the Judiciary, United States House of Representatives, 86th Congress, 1st Session, on H. R. 432, H. R. 297, H. R. 6049, and S. 726, bills to amend section 11 of the Clayton Act to provide for the more expeditious enforcement of cease and desist orders issued thereunder, and for other purposes), 108 pp., printed. Contains text of the several legislative bills; testimony presented by Government and private industry representatives; certain Departmental, Commission, and Committee reports; and various statements submitted for the record. Also included is the document entitled, "The Merger Movement in Retail Food Distribution, 1955-58," a four-year study of the trend toward centralized power in America's major distributive industry, published by the National Association of Retail Grocers.

Senate on July 7 concurred in House amendments to S. 726, to amend section 11 of the Clayton Act so as to provide for the more expeditious enforcement of cease-and-desist orders issued thereunder, which action would have cleared the bill for the President. On July 8 the Senate reconsidered its action of July 7 in concurring in House amendments to S. 726, agreed to House amendments to the bill, with amendments, and returned the bill to the House. The legislation would implement the enforcement procedures of the Clayton Act by making applicable the present Federal Trade Commission Act enforcement provisions against price discrimination, tying arrangements, mergers, and interlocking directorates.

PRICE DISCRIMINATION FUNCTIONAL DISCOUNTS: The Antitrust Subcommittee of the House Committee on the Judiciary conducted hearings June 25 and 26 on H. R. 848, H. R. 927, H. R. 2788, H. R. 2868, and H. R. 4530, to amend the Robinson-Patman Act so as to provide for the mandatory nature of functional discounts under certain circumstances, and for other purposes. The legislation is designed to supplement existing laws relating to price discrimination and for other purposes.

RAILWAY EXPRESS AGENCY ACTIVITIES: The desirability of the acquisition by the Post Office Department of equipment, facilities, and operations of the Railway Express Agency is under consideration. The Senate Post Office and Civil Service Commission announced hearings on the subject under S. Res. 8.

Senator Olin D. Johnston of South Carolina, Chairman of the Committee on June 18 sent the following telegram to the President of the Railway Express Agency:

"In compliance with your request hearing set for June 22nd under Senate Resolution 8 to consider advisability of the Post Office Department acquiring equipment and facilities of Railway Express Agency is being postponed to Tuesday, July 7th. Committee considers matter of great urgency. Cannot postpone beyond this date. Should railroads decide to discontinue Railway Express Agency, plans must be formulated to provide for adequate transportation of small packages by appropriate Government agency and to absorb employees of Railway Express Agency."

Senator Johnston also released the telegram received by him on June 12 from the President of the Railway Express Agency, requesting deferment of the hearings:

"Have advice of hearing set for June 22 under Senate Resolution 8 to consider advisability of having Post Office Department acquire equipment and facilities of Railway Express Agency. The Agency's management has laid a plan of reorganization before its Board of Directors. This will have intensive study of a special Board Committee prior to consideration at the next Board meeting on July 2. If approved, it will then be submitted to the 178 contract railroads for action. Accordingly, we urge that the June 22 hearing be deferred until after July 31. Please advise."

The Senator had previously announced on June 12 that the Committee would begin hearings on June 22.

SALMON IMPORT RESTRICTIONS: Joint Memorial of the State of California Legislative Assembly presented to the House June 16, and to the Senate June 17. The memorial urges the President and the Congress of the United States to take necessary actions to bring about a treaty between the United States, Canada, Japan, and Russia to properly protect the fish resources of the North Pacific Ocean; referred to the respective House and Senate Committees on Interstate and Foreign Commerce.

SHIP MORTGAGE INSURANCE AMENDMENTS OF 1959: The House Committee on Merchant Marine and Fisheries on June 30 ordered favorably reported S. 1434, an Act to amend Title XI of the Merchant Marine Act, 1936, as amended, with respect to insurance of ship mortgages, and for other purposes; without amendment (H. Rept. No. 631); referred to the Committee of the Whole House on the State of the Union. Provides that the prospective owner of a vessel be permitted to delay placing a mortgage on the vessel until some time after it has been delivered by the shipbuilder, without losing privilege of having the mortgage insured. Would permit the prospective owner to save on interest charges, and would reduce the period of time during which the Secretary of Commerce is under risk with respect to the mortgage.

House Report No. 631, an amendment to the Merchant Marine Act with respect to insurance of ship mortgages (July 1, 1959, 86th Congress, 1st Session, Report of the House Committee on Merchant Marine and Fisheries, to accompany S. 1434), 8 pp., printed. Contains provisions of the bill, legislative background, reports favoring the legislation, and changes in existing law.

The Subcommittee on Merchant Marine of the House Committee on Merchant Marine and Fisheries on July 9 held hearings on H. R. 2241 and related bills, to amend title XI of the Merchant Marine Act, 1936, in order to provide mortgage and loan insurance for the construction, reconstruction, or reconditioning of vessels in shipyards in the continental United States.

SMALL BUSINESS AID FOR FIRMS AFFECTED BY FOREIGN TRADE POLICY: The Subcommittee on Small Business of the Senate Committee on Banking and Currency conducted hearings June 22, 29, 30, July 1, 2, 7, and 8, on pending small business legislation including S. 1609, to provide assistance to small business concerns adversely affected by foreign trade policy, and for other purposes.

SMALL BUSINESS INVESTMENT ACT OF 1958 AMENDMENTS: S. 2139 (Saltonstall), a bill to amend the Small Business Investment Act of 1958, and for other purposes; to the Committee on Banking and Currency; introduced in Senate June 9. The bill provides certain amendments for improving the small business investment program to meet the needs of small business for equity capital and long-term loans. Would provide banking subsidiaries of bank holding companies with greater latitude in investing in small business investment companies. Certain restrictions regarding the formation of investment companies would be eliminated as would restrictions which require equity capital be provided only through the medium of convertible debentures. The bill further eliminates the requirement that a small business concern must purchase a certain amount of a small business investment company's stock in order to obtain equity capital from the investment company. Included are a number of amendments and changes of clarifying nature, and for other purposes.

Also H. R. 7691 (Moore) introduced in House June 11, H. R. 7706 (McDowell) introduced in House June 12, H. R. 7751 (Bass of New Hampshire) introduced in House June 16, H. R. 8096 (Evins) introduced in House July 6, and H. R. 8114 (Dwyer) introduced in House July 7; to the Committee on Banking and Currency. Similar to S. 979 and related bills previously introduced which provide certain amendments for improving the small business investment program to better meet the needs of small business, and for other purposes.

Subcommittee on Small Business of the Senate Committee on Banking and Currency conducted hearings on June 22, 29, 30, July 1, 2, 7, and 8, on small business legislation including S. 2139, to amend the Small Business Investment Act of 1958, and for other purposes.

SMALL BUSINESS TAX RELIEF: H. R. 7704 (McDowell), a bill to provide a program of tax adjustment for small business and for persons engaged in small business; introduced in House June 12; also H. R. 7651 (Lafore) introduced in House June 10, H. R. 7959 (Riehlman) introduced in House June 24, H. R. 8011 (Multer) introduced in House June 29, and H. R. 8090 (Alger) introduced in House July 6; all to the Committee on Ways and Means. Similar to H. R. 2 and related bills previously introduced which provide for tax adjustment in the interest of small business.

SOCIAL SECURITY TAX EXEMPTION PROVISIONS FOR CERTAIN FISHING ACTIVITIES: S. 2126 (Eastland), a bill to exclude from coverage under the insurance system established by title II of the Social Security Act service performed by individuals in connection with certain fishing and related activities; to the Committee on Finance; introduced in Senate June 5. Also H. R. 8094 (Colmer); to the Committee on Ways and Means; introduced in House July 6.

STATE DEPARTMENT APPROPRIATIONS: The Subcommittee of the Senate Committee on appropriations on June 19, favorably reported to the full committee H. R. 7343, fiscal 1960 appropriations for the Departments of State and Justice, Judiciary, and related agencies. Included under the State Department are funds for the international fisheries commissions to enable the United States to meet its obligations in connection with participation in eight such commissions pursuant to treaties or conventions, and implementing Acts of Congress.

The Senate Committee on Appropriations on June 22 ordered favorably reported to the Senate H. R. 7343, with amendments (S. Rept. 424).

Senate Report No. 424, Departments of State and Justice, the Judiciary, and related agencies, appropriation bill 1960 (June 22, 1959, 86th Congress, 1st Session, Report of the Senate Committee on Appropriations to accompany H. R. 7343), 20 pp., printed. Contains amount of bill as passed House, Committee recommendations, and comparison with amount of 1959 appropriations and 1960 budget estimates. For the international fisheries commissions, the Senate Committee recommended the same amount as provided by the House, $1,725,000--an increase of $61,300 over the 1959 fiscal year appropriations to meet increased pay costs, but $29,000 below the amount of the budget request.

The Senate on June 23 passed with amendments H. R. 7343. The Senate insisted on its amendments,

asked for conference with the House, and appointed conferees.

The House disagreed to Senate Amendments to H. R. 7343, on June 29 agreed to a conference with the Senate, and appointed conferees.

The Senate and House Conferees, on July 30 filed a conference report on H. R. 7343, making appropriations for the Departments of State and Justice, the Judiciary, and related agencies for fiscal year 1960 (H. Rept. 620).

House Report No. 620, Departments of State and Justice, the Judiciary, and related agencies appropriation bill, 1960 (June 30, 1959, 86th Congress, 1st Session, Conference Report of the Joint Senate and House Committee of Conferees, to accompany H. R. 7343), 7 pp., printed. Lists the recommendations made by the Conference Committee to the respective Houses on the disagreeing votes on the amendments of the Senate to the bill. The report also contains an explanation of the effect of actions agreed upon and recommended by the Committee. For the International Fisheries Commissions the Committee recommended the same amount as provided by both the House and Senate--$1,725,000, an increase of $61,300 over the 1959 fiscal year appropriation to meet increased pay costs, but $29,000 below the amount requested in the budget estimate.

House agreed to conference report on July 1 and receded and concurred on certain Senate amendments. The Senate on the same date agreed to conference report concurring to certain House amendments to Senate amendments clearing H. R. 7343 for the President.

SUPPLEMENTAL APPROPRIATIONS, 1960: H. R. 7978 (Thomas), a bill making supplemental appropriations for the fiscal year ending June 30, 1960, and for other purposes; to the Committee of the Whole House on the State of the Union; introduced in House June 26.

House Report No. 579, Supplemental Appropriation Bill 1960 (June 26, 1959, 86th Congress, 1st Session, Report of the House Committee on Appropriations, to accompany H. R. 7978), 13 pp., printed. Provides supplemental appropriations for certain agencies and departments. Includes $10.5 million for the State of Alaska as limited assistance during the transitional period from territorial status to help finance functions formerly performed by the Federal Government; $850,000 for studies to be carried out in fiscal year 1959-1960 by the National Outdoor Recreation Review Commission in conducting its nation-wide inventory and evaluation of outdoor recreation assets; $660,000 for the River Basin Study Commission for South Carolina-Georgia-Alabama-Florida; and $720,000 for the River Basin Study Commission for Texas.

Supplemental Appropriation, 1960: Hearings before the Subcommittee on Deficiencies, House Committee on Appropriations, 86th Congress, 1st Session, on Supplemental Appropriation Bill, 1960 (providing funds for certain agencies, commissions, departments, and other purposes), 317 pp., printed. Contains budget estimates and testimony presented by agencies and departments of Government. Included are funds pursuant to legislative authorization for transitional grants to Alaska; for the National Outdoor Recreation Resources Review Commission; and for certain River Basin Study Commissions.

House on June 29 passed H. R. 7978, making supplemental appropriations for fiscal year 1960 for certain departments and agencies of Government; referred to the Senate Committee on Appropriations.

The Senate Committee on Appropriations held hearings July 13, 14, 16 and 17 on H. R. 7978, supplemental appropriations for fiscal 1960. Included are funds pursuant to legislative authorization for transitional grants to Alaska (Public Law 86-70); for the National Outdoor Recreation Resources Review Commission; and for certain River Basin Study Commissions.

TRADE AGREEMENTS PROGRAM: The President on June 25, pursuant to law, transmitted to the Senate the third annual report on the operation of the trade agreements program, with accompanying message (S. Doc. No. 31); referred to the Committee on Finance.

TRADE AGREEMENT ACT AMENDMENTS: H. R. 7863 (Dent), a bill to provide that the authority to enter into foreign trade agreements shall expire on June 30, 1960, and to provide that the Congress may disapprove any foreign trade agreement proposed to be entered into during the 1-year period beginning on July 1, 1959; to the Committee on Ways and Means; introduced in House June 19. Somewhat similar to H. R. 670 and related bills previously introduced which would provide for changes in the Trade Agreements Act, and for other purposes.

UNEMPLOYMENT RELIEF IN DEPRESSED AREAS: H. J. Res. 423 (Oliver), a House Joint Resolution to provide for a special research inquiry into the causes of chronic unemployment in economically depressed areas, and for other purposes; introduced in House June 10; also H. J. Res. 434 (Anderson of Montana) introduced in House June 23; both to the Committee on Government Operations. Provides authority for the Council of Economic Advisers to the President to conduct an official study or investigation to determine what remedial measures might be undertaken to counteract the growth of chronic unemployment resulting from technological advance in industry, and for other purposes. Similar to H. J. Res. 411 previously introduced.

UNEMPLOYMENT TAX EXEMPTION PROVISIONS FOR CERTAIN FISHING ACTIVITIES: H. R. 8095 (Colmer), a bill to provide that the tax imposed by the Federal Unemployment Tax shall not apply with respect to service performed by individuals in connection with certain fishing and related activities; to the Committee on Ways and Means; introduced in House July 6. Similar to S. 2125 previously introduced.

WAGES: The Secretary of Labor transmitted to the Congress a draft of proposed legislation to amend the Fair Labor Standards Act of 1938, as amended, to provide more effective procedures for enforcing the provisions of the act (with accompanying papers); presented in the House July 1, referred to the Committee on Education and Labor; presented in the Senate July 7, referred to the Committee on Labor and Public Welfare.

The Subcommittee on Labor of the Senate Committee on Labor and Public Welfare met in executive session July 9 on S. 1046 and other bills to amend the Fair Labor Standards Act, so as to extend coverage under the Act, increase the minimum hourly wages, and for other purposes.

WAGE LAW ENFORCEMENT OF CERTAIN PROVISIONS: H. R. 8059 (Frelinghuysen), a bill to amend the Fair Labor Standards Act of 1938, as amended, to provide more effective procedures for enforcing the provisions of the Act; introduced in House July 1; referred to the Committee on Education and Labor. Provides for amendment of existing law to strengthen enforcement provisions in regards to payment of minimum wages and overtime compensation.

WATER CONSERVATION ACT OF 1959: The House committee on Public Works on July 9-10 conducted hearings on H. R. 8, to promote and establish policy and procedure for the development of water resources of lakes, rivers, and streams.

DIVERS REPORT REEFS ATTRACT NEW FISH LIFE

Artificial ocean reefs are beginning to accomplish just what was expected of them. They were established in an effort to attract marine life to former underwater barren areas, thus providing additional sport to anglers.

At Paradise Cove, where old car bodies were placed on the bottom, 18 species of fish were counted during checkup dives by California biologists. Most common were kelp bass, sargo, and several kinds of perch, including rubberlip, pile, black, barred, shiner, walleye, and rainbow. There now are a fair number of sheepshead and one cabezon was seen for the first time.

At Redondo Beach-Palos Verdes, where junked streetcars were placed, 11 species of fish were observed, most of them inside the cars. They were: kelp and sand bass, halfmoon, blacksmith, two kinds of blenny, sand dab, sheepshead, angel shark, and an unidentified flatfish.

Loitering near by was a school of bonito and three lobsters apparently were trying to decide whether to settle down in the new "housing tract."

At Monterey Oil Island-Seal Beach, large numbers of fish--24 species in all--were counted. Oil crews reported excellent fishing.

A dive was made off Corona del Mar to check the need for a possible future reef. However, because there were many rocks on the sand bottom and the area appeared to be naturally good habitat, no artificial development seems necessary.

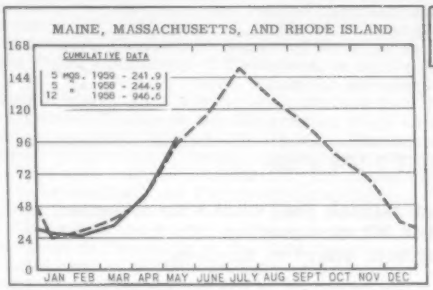
At the Richfield Oil Island-Rincon, lingcod and sand bass were noted for the first time and larger numbers of large rubberlip perch were seen than on previous dives.

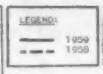
The Standard-Humble Oil Platform-Summerland area had lingcod, cabezon, and three species of rockfish for the first time. Jack mackerel were numerous.

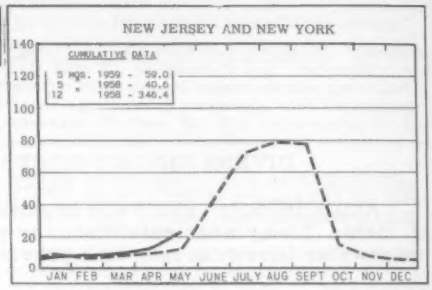
The Carlisle report said commercial fishing and cannery interests as well as sportsmen have shown considerable interest in the project and have pledged their support. (Outdoor California, January 1959.)

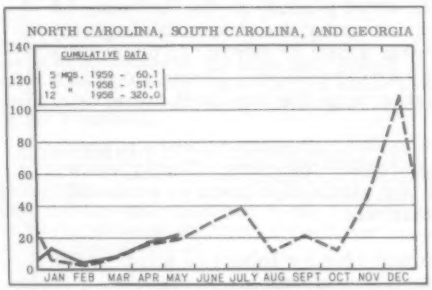
CHART 1 - FISHERY LANDINGS for SELECTED STATES

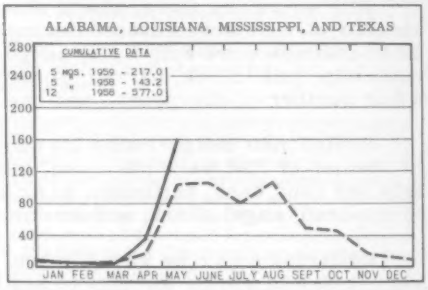
In Millions of Pounds

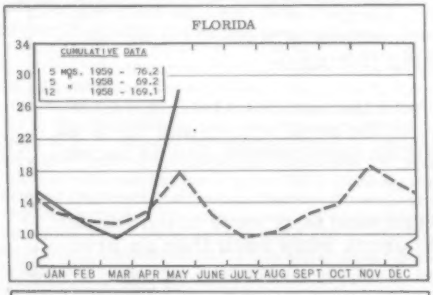


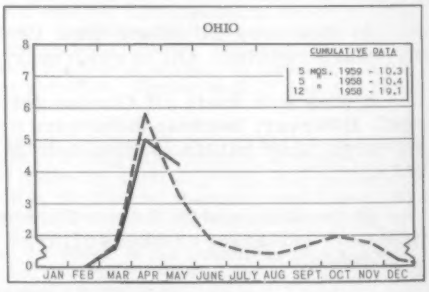


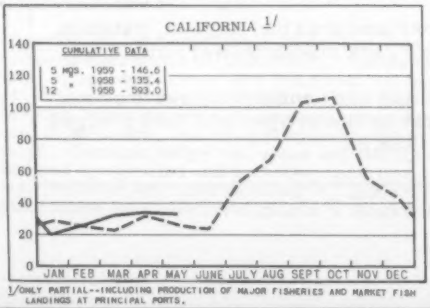












1/ONLY PARTIAL--INCLUDING PRODUCTION OF MAJOR FISHERIES AND MARKET FISH LANDINGS AT PRINCIPAL PORTS.

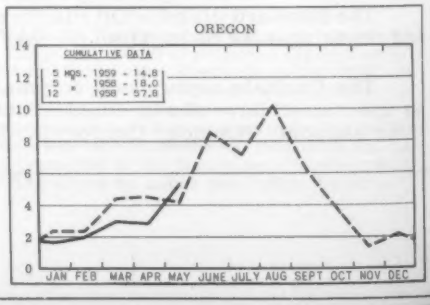
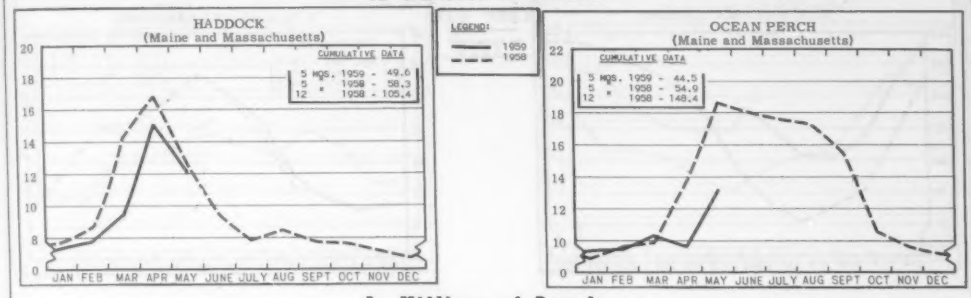
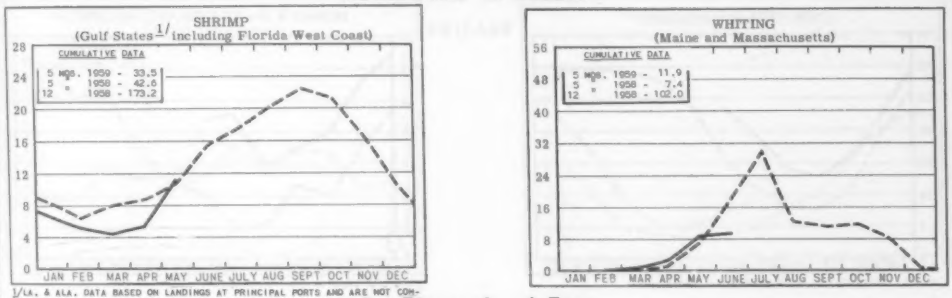


CHART 2 - LANDINGS for SELECTED FISHERIES

In Millions of Pounds

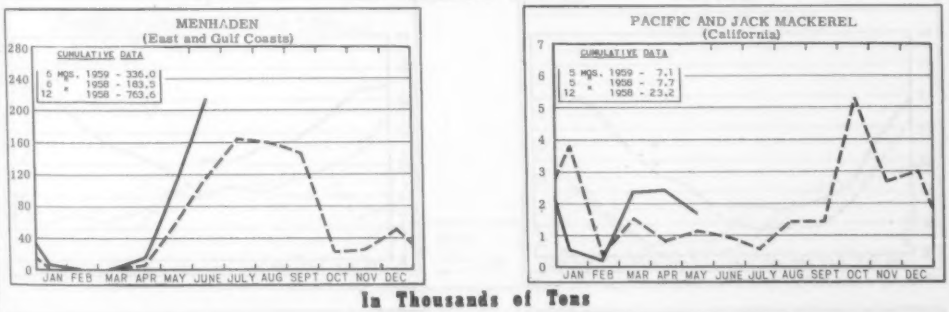


In Millions of Pounds


SHRIMP
(Gulf States 1/ including Florida West Coast)
CUMULATIVE DATA
5 MOS. 1959 - 33.5
5 " 1958 - 42.6
12 " 1958 - 173.2
WHITING
(Maine and Massachusetts)
CUMULATIVE DATA
5 MOS. 1959 - 11.9
5 " 1958 - 7.4
12 " 1958 - 102.0
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

1/LA. & ALA. DATA BASED ON LANDINGS AT PRINCIPAL PORTS AND ARE NOT COMPLETE.

In Thousands of Tons


MENHADEN
(East and Gulf Coasts)
CUMULATIVE DATA
5 MOS. 1959 - 336.0
5 " 1958 - 183.5
12 " 1958 - 763.6
PACIFIC AND JACK MACKEREL
(California)
CUMULATIVE DATA
5 MOS. 1959 - 7.1
5 " 1958 - 7.7
12 " 1958 - 23.2
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC

In Thousands of Tons

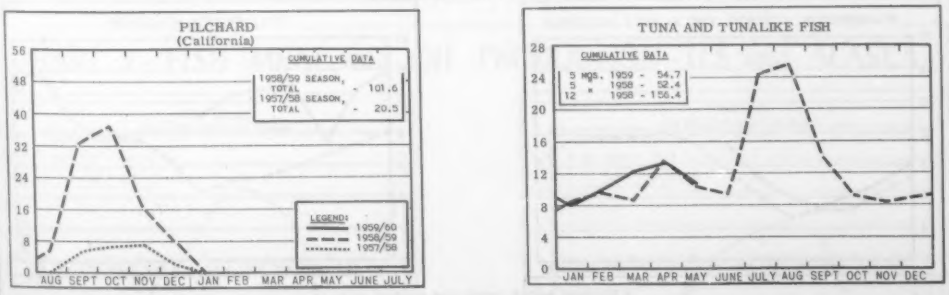
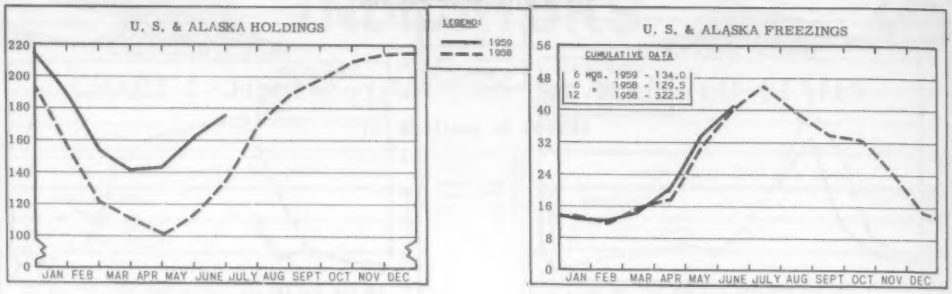
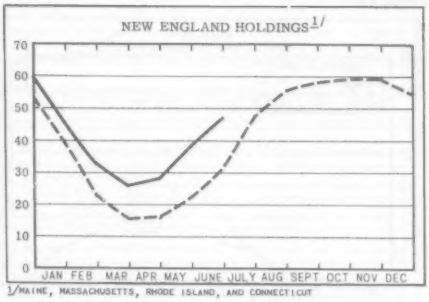


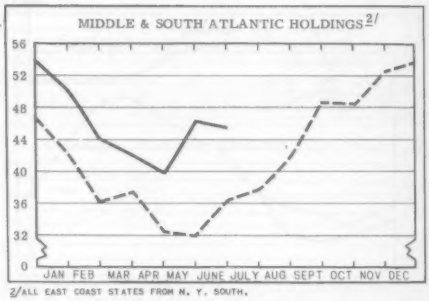
CHART 3 - COLD-STORAGE HOLDINGS and FREEZINGS of FISHERY PRODUCTS *

In Millions of Pounds

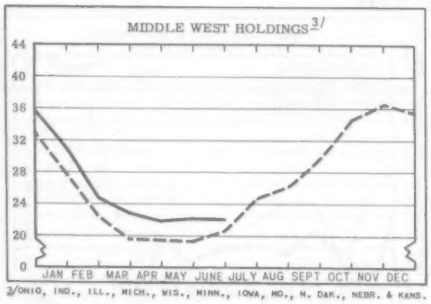




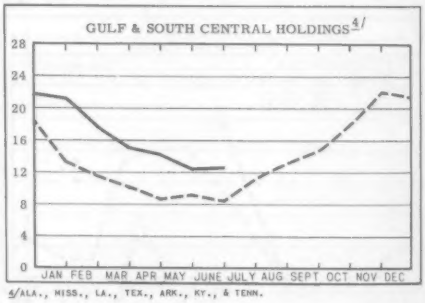
1/MAINE, MASSACHUSETTS, RHODE ISLAND, AND CONNECTICUT



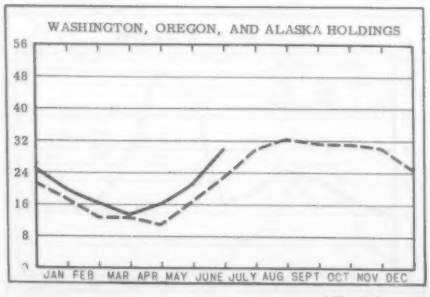
2/ALL EAST COAST STATES FROM N. Y. SOUTH.

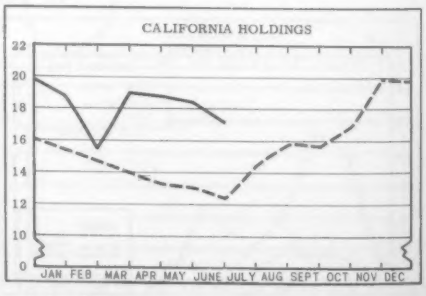


3/OHIO, IND., ILL., MICH., WIS., MINN., IOWA, MO., N. DAK., NEBR. & KANS.



4/ALA., MISS., LA., TEX., ARK., KY., & TENN.





* Excludes salted, cured, and smoked products.

CHART 4 - RECEIPTS and COLD-STORAGE HOLDINGS of FISHERY PRODUCTS at PRINCIPAL DISTRIBUTION CENTERS

In Millions of Pounds

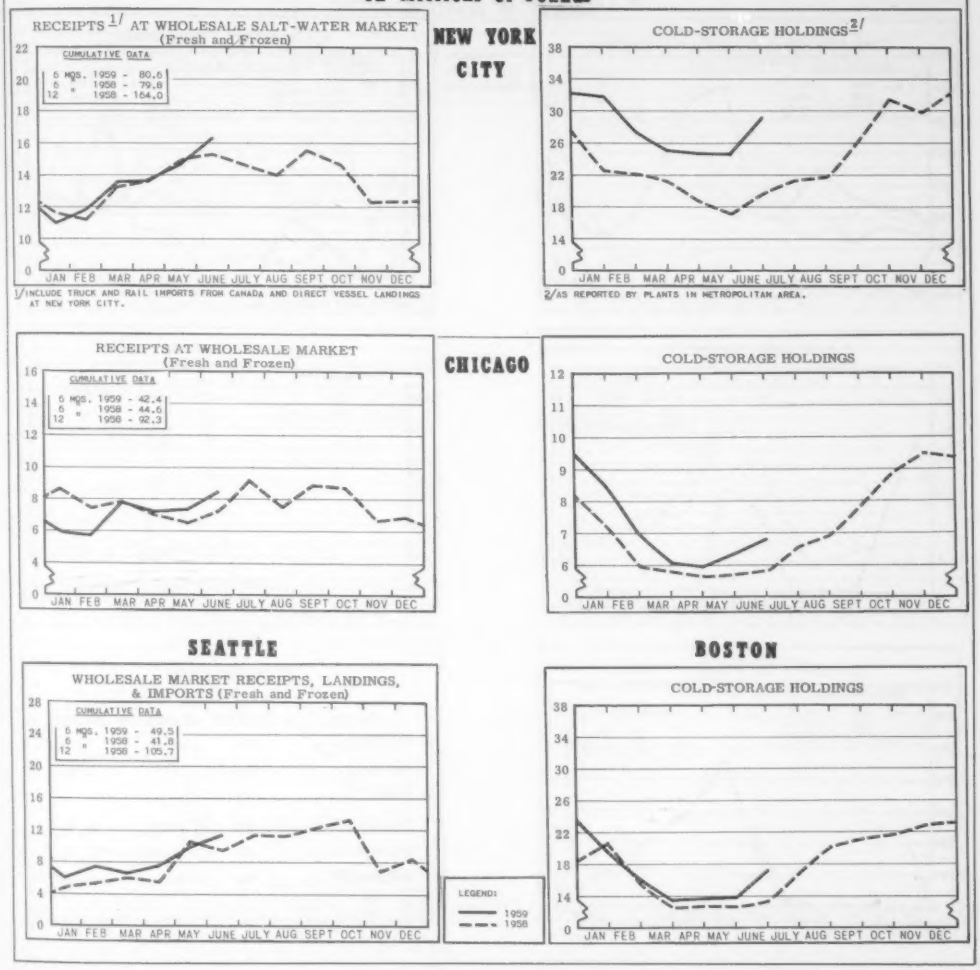

RECEIPTS 1/ AT WHOLESALE SALT-WATER MARKET (Fresh and Frozen)
CUMULATIVE DATA
6 MOS. 1959 - 80.6
6 " 1958 - 79.8
12 " 1958 - 164.0
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
1/INCLUDE TRUCK AND RAIL IMPORTS FROM CANADA AND DIRECT VESSEL LANDINGS AT NEW YORK CITY.
NEW YORK CITY
COLD-STORAGE HOLDINGS 2/
2/AS REPORTED BY PLANTS IN METROPOLITAN AREA.
RECEIPTS AT WHOLESALE MARKET (Fresh and Frozen)
CUMULATIVE DATA
6 MOS. 1959 - 42.4
6 " 1958 - 44.6
12 " 1958 - 92.3
CHICAGO
COLD-STORAGE HOLDINGS
SEATTLE
WHOLESALE MARKET RECEIPTS, LANDINGS, & IMPORTS (Fresh and Frozen)
CUMULATIVE DATA
6 MOS. 1959 - 49.5
6 " 1958 - 41.8
12 " 1958 - 105.7
BOSTON
COLD-STORAGE HOLDINGS
LEGEND:
1959
1958

CHART 5 - FISH MEAL and OIL PRODUCTION - U.S and ALASKA

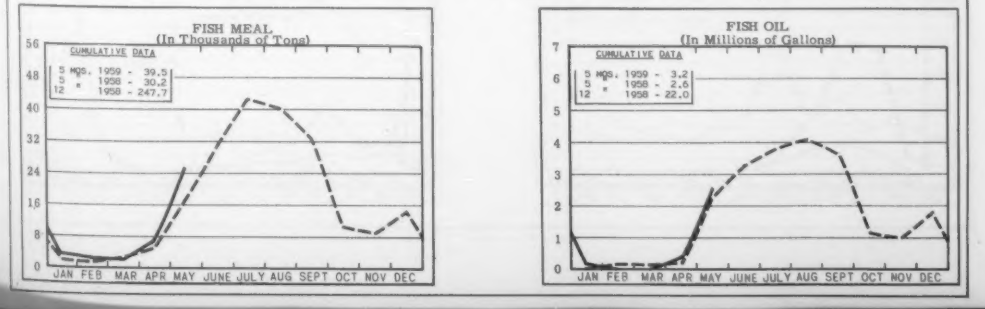
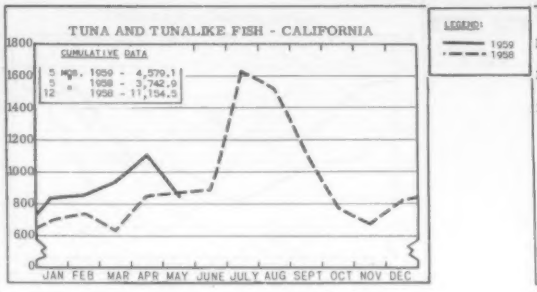
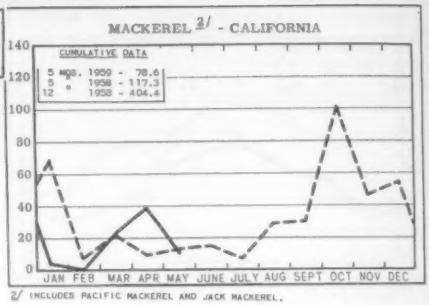

FISH MEAL
(In Thousands of Tons)
CUMULATIVE DATA
5 MOS. 1959 - 39.5
5 " 1958 - 30.2
12 " 1958 - 247.7
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
FISH OIL
(In Millions of Gallons)
CUMULATIVE DATA
5 MOS. 1959 - 3.2
5 " 1958 - 2.6
12 " 1958 - 22.0

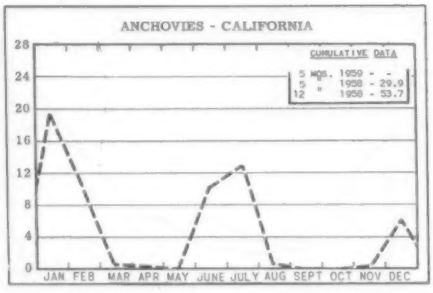
CHART 6 - CANNED PACKS of SELECTED FISHERY PRODUCTS

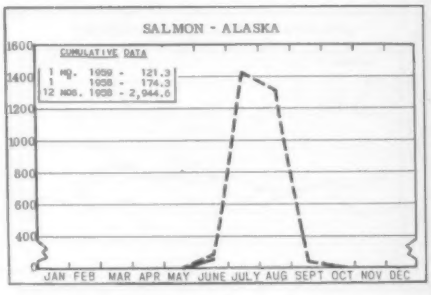
In Thousands of Standard Cases

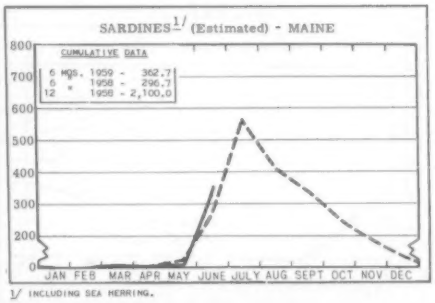




2/ INCLUDES PACIFIC MACKEREL AND JACK MACKEREL.



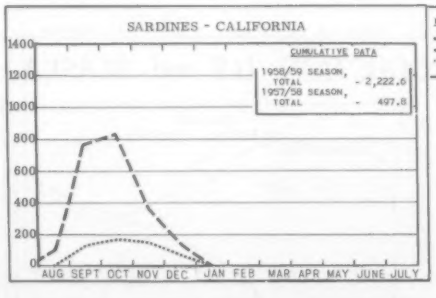




1/ INCLUDING SEA HERRING.

STANDARD CASES

Variety	No. Cans	Designation	Net Wgt.
SARDINES.....	100	¼ drawn	3¾ oz.
SHRIMP.....	48	--	5 oz.
TUNA.....	48	# ½ tuna	6 & 7 oz.
PILCHARDS...	48	# 1 oval	15 oz.
SALMON.....	48	1-lb. tall	16 oz.
ANCHOVIES...	48	½-lb.	8 oz.



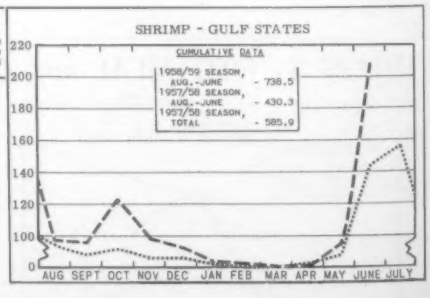
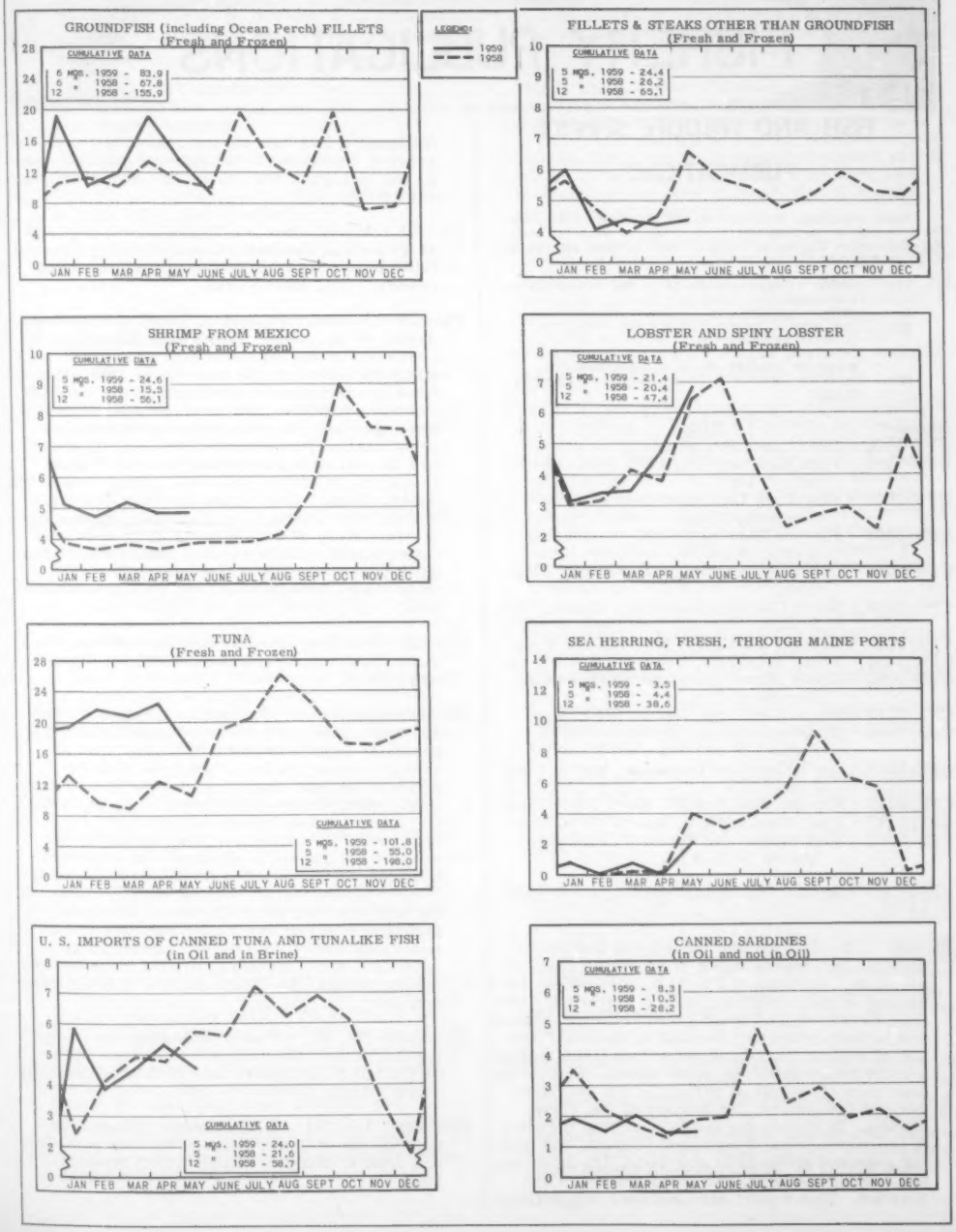


CHART 7 - U.S. FISHERY PRODUCTS IMPORTS

In Millions of Pounds


GROUNDFISH (including Ocean Perch) FILLETS
(Fresh and Frozen)
CUMULATIVE DATA
6 MOS. 1959 - 83.9
6 " 1958 - 67.8
12 " 1958 - 155.9
LEGEND:
1959
1958
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
FILLETS & STEAKS OTHER THAN GROUNDFISH
(Fresh and Frozen)
CUMULATIVE DATA
5 MOS. 1959 - 24.4
5 " 1958 - 26.2
12 " 1958 - 69.1
SHRIMP FROM MEXICO
(Fresh and Frozen)
CUMULATIVE DATA
5 MOS. 1959 - 24.6
5 " 1958 - 15.5
12 " 1958 - 56.1
LOBSTER AND SPINY LOBSTER
(Fresh and Frozen)
CUMULATIVE DATA
5 MOS. 1959 - 21.4
5 " 1958 - 20.4
12 " 1958 - 47.4
TUNA
(Fresh and Frozen)
CUMULATIVE DATA
5 MOS. 1959 - 101.8
5 " 1958 - 55.0
12 " 1958 - 198.0
SEA HERRING, FRESH, THROUGH MAINE PORTS
CUMULATIVE DATA
5 MOS. 1959 - 3.5
5 " 1958 - 4.4
12 " 1958 - 38.6
U. S. IMPORTS OF CANNED TUNA AND TUNALIKE FISH
(in Oil and in Brine)
CUMULATIVE DATA
5 MOS. 1959 - 24.0
5 " 1958 - 21.6
12 " 1958 - 58.7
CANNED SARDINES
(in Oil and not in Oil)
CUMULATIVE DATA
5 MOS. 1959 - 8.3
5 " 1958 - 10.5
12 " 1958 - 26.2

FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE DIVISION OF INFORMATION, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES AND ALASKA.
FL - FISHERY LEAFLETS.
SSR.- FISH.-SPECIAL SCIENTIFIC REPORTS--FISHERIES (LIMITED DISTRIBUTION).
SL - STATISTICAL SECTION LISTS OF DEALERS IN AND PRODUCERS OF FISHERY PRODUCTS AND BYPRODUCTS.
SEP.- SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.

Number Title

CFS-1990 - Ohio Landings, March 1959, 2 pp.
CFS-1994 - Fish Meal and Oil, 1958 Annual Summary, 4 pp.
CFS-2000 - New York Landings, 1958 Annual Summary, 8 pp.
CFS-2001 - Florida Landings, 1958 Annual Summary, 10 pp.
CFS-2035 - California Landings, December 1958, 4 pp.
CFS-2036 - North Carolina Landings, March 1959, 3 pp.
CFS-2037 - Georgia Landings, March 1959, 2 pp.
CFS-2038 - Texas Landings, February 1959, 3 pp.
CFS-2042 - Rhode Island Landings, 1958 Annual Summary, 7 pp.
CFS-2045 - Maine Landings, March 1959, 3 pp.
CFS-2046 - Shrimp Landings, December 1958, 6 pp.
CFS-2047 - South Carolina Landings, March 1959, 2 pp.
CFS-2049 - Frozen Fish Report, April 1959, 8 pp.
CFS-2057 - Fish Meal and Oil, March 1959, 2 pp.
CFS-2058 - Fish Sticks and Portions, January-March 1959, 3 pp.

FL-476g - Canned Fish Retail Prices, April 1959, 27 pp.

FL-480 - The Bait Shrimp Industry of the Gulf of Mexico, by Anthony Inglis and Edward Chin, 15 pp., illus., revision of FL-337, April 1959. Live shrimp is the preferred bait for sea trout, redfish, flounders, and most game fishes of the bays and inshore waters of the Gulf of Mexico. The use of shrimp for this purpose has given rise to a large bait industry in some areas. This study describes the kinds of shrimp in the bait fishery and the general life history of the white shrimp. In discussing the bait shrimp industry of Galveston area, Texas, and Florida, the fishing gear and methods of operation, transporting and holding methods, and trade practices are covered. This report also includes suggestions for holding live bait shrimp, scientific names of species mentioned in the text and publications on the biology of shrimp and the bait shrimp industry.

FL-483 - Instructions for Typing Manuscripts to be Printed at the Government Printing Office (With Exceptions for Manuscripts to be Processed), 7 pp., March 1959.

FL-485 - Japanese Fisheries Based in Overseas Areas, 30 pp., illus., May 1959. Describes the expansion of the Japanese high-seas fisheries since the end of the Occupation in 1952. Sections are included on development and types of overseas fisheries, Government control of overseas operation, and overseas operations by countries. Japanese overseas enterprises are now in operation or planned in more than 35 countries, in which about 200 fishing vessels are based. About 140 of these are tuna vessels, mainly long-liners. Tuna processing plants are in some stage of development in 15 countries. Other plants include sardine canneries, shrimp and crab canneries and freezing plants, fish meal plants, and freezers for locally-consumed fish.

FL-486 - Recommended Treatment for Fish Parasite Diseases, by Glenn L. Hoffman, 4 pp., April 1959.

Conservation Notes--Fishing for Food, Circular 55, 6 pp., illus., processed, March 1959. This pamphlet describes some fishing terms; the need for conservation of the seas' fish resources; and the dangers of predators, obstructions, water fluctuations, storms, human activity, domestic and industrial pollution, and careless use of pesticides. It also describes the work of the Bureau of Commercial Fisheries and other fact-finding organizations; the work of fishery biologists in studying the life history of various species; the problems of fish habitats; plankton; tagging; color marking; underwater television and SCUBA divers; chemical aids; electrical aids; spawning; sounds made by fish; sea mammals; the American catch; and vessels and gear.

SSR-Fish. No. 261 - Plastic Standpipe for Sampling Streambed Environment of Salmon Spawn, by Harold A. Gangmark and Richard G. Bakkala, 24 pp., illus., November 1958.

SSR-Fish. No. 281 - Water Soluble Vitamin Requirements of Silver Salmon, by John A. Coates and John E. Halver, 12 pp., illus., November 1958.

SSR-Fish. No. 288 - Intermediary Metabolism of Fishes and Other Aquatic Animals, by M. Gumbmann, W. Duane Brown, and A. L. Tappel, 55 pp., illus., December 1958.

SSR-Fish. No. 296 - Etiology of Sockeye Salmon "Virus" Disease, by Raymond W. Guenther, S. W. Watson, and R. R. Rucker, with Addendum by A. J. Ross and R. R. Rucker, 14 pp., illus., February 1959.

Firms Canning 1958 (Revised):
SL-101 - Salmon.
SL-102 - Maine Sardines.
SL-104 - Mackerel.
SL-111 - Clam Products.
SL-112 - Shrimp.
SL-151 - Firms Manufacturing Fish Meal, Scrap, and Body Oils, 1958 (Revised).

Sep. No. 553 - Shrimp Exploration in Central Alaskan Waters by M/V John N. Cobb, July-August 1958.

Sep. No. 554 - Current Status of the Inter-American Development Bank.

Sep. No. 555 - Research in Service Laboratories (July 1959): Contains these articles--"Proximate Composition of Gulf of Mexico Industrial Fish Part 3 - Fall Studies (1958);" and "Technical Note No. 54 - Dicarbonyl Compounds as Components of Fish Odor."

THE FOLLOWING SERVICE PUBLICATIONS ARE AVAILABLE ONLY FROM THE SPECIFIC OFFICE MENTIONED.

California Fishery Products Monthly Summary, April 1959, 13 pp. (Market News Service, U. S. Fish and Wildlife Service, Post Office Bldg., San Pedro, Calif.) California cannery receipts of tuna and tunalike fish; pack of canned tuna, mackerel, and anchovies; market fish receipts at San Pedro, Santa Monica, and Eureka areas; California and Arizona imports; canned fish and frozen shrimp prices; ex-vessel prices for cannery fish; American Tuna Boat Association auction sales; for the month indicated.

(Chicago) Monthly Summary of Chicago's Fresh and Frozen Fishery Products Receipts and Wholesale Market Prices, April 1959, 13 pp. (Market News Service, U. S. Fish and Wildlife Service, 565 W. Washington St., Chicago 6, Ill.) Receipts at Chicago by species and by states and provinces for fresh- and salt-water fish and shellfish; and wholesale prices for fresh and frozen fishery products; for the month indicated.

Monthly Summary of Fishery Products Production in Selected Areas of Virginia, North Carolina, and Maryland, May 1959, 4 pp. (Market News Service, U. S. Fish and Wildlife Service, 18 So. King St., Hampton, Va.) Fishery landings and production for the Virginia areas of Hampton Roads, Lower Northern Neck, and Eastern Shore; the Maryland areas of Crisfield, Cambridge, and Ocean City; and the North Carolina areas of Atlantic, Beaufort, and Morehead City; together with cumulative and comparative data; for the month indicated.

New England Fisheries--Monthly Summary, April 1959, 21 pp. (Market News Service, U. S. Fish and Wildlife Service, 10 Commonwealth Pier, Boston 10, Mass.) Reviews the principal New England fishery ports, and presents food fish landings by ports and species; industrial fish landings and ex-vessel prices; imports; cold-storage stocks of fishery products in New England warehouses; fishery landings and ex-vessel prices for ports in Massachusetts (Boston, Gloucester, New Bedford, Provincetown, and Woods Hole), Maine (Portland and Rockland), Rhode Island (Point Judith), and Connecticut (Stonington); frozen fishery products prices to primary wholesalers at Boston, Gloucester, and New Bedford; and landings and ex-vessel prices for fares landed at the Boston Fish Pier and sold through the New England Fish Exchange; for the month indicated.

New York City's Wholesale Fishery Trade--Monthly Summary for January 1959, 21 pp. (Market News Service, 155 John St., New York 38, N. Y.) Includes summaries and analyses of receipts and prices on wholesale Fulton Fish Market, imports entered at New York City, primary wholesaler prices for frozen products, and marketing trends; for the month indicated.

(Seattle) Washington, Oregon, and Alaska Receipts and Landings of Fishery Products for Selected Areas and Fisheries, Monthly Summary, May 1959, 9 pp. (Market News Service, U. S. Fish and Wildlife Service, Pier 42 South, Seattle 4, Wash.) Includes landings and local receipts, with ex-vessel and wholesale prices in some instances, as reported by Seattle and Astoria, (Ore.) wholesale dealers; also Northwest Pacific halibut landings; and Washington shrimp landings; for the month indicated.

Fishery Regulation and the Position of Coastal Countries, by Kenzo Kawakami, Pacific Salmon Investigations, Translation Series No. 22, 22 pp., processed. (Translated from Suisan Kagaku, vol. 6, no. 3-4, December 1957, pp. 13-20.) U. S. Fish and Wildlife Service, Bureau of Commercial Fisheries, Pacific Salmon Investigations, Seattle, Wash., July 30, 1958.

Provisional Keys to the Fishes of Alaska, by Norman J. Wilimovsky, 120 pp., printed. Fisheries Research Laboratory, U. S. Fish and Wildlife Service, P. O. Box 2021, Juneau, Alaska, May 1958.

Studies on Fish Culture in the Aquarium of Closed-Circulating System, Its Fundamental Theory and Standard Plan, by Aritsune Saeki, 14 pp. processed, 6 pp. printed tables, English translation. (From Bulletin of the Japanese Society of Scientific Fisheries, vol. 23, no. 11, 1958, pp. 684-695.) U. S. Fish and Wildlife Service, Bureau of Commercial Fisheries, Box 3830, Honolulu, Hawaii.

Translated Data on the Japanese Tuna Fishery, by Wilvan G. Van Campen, 11 pp., illus., processed. (Statistical tables on the Japanese tuna fishing industry which appeared in the February 1956 issue of Katsuo to Maguro, organ of the Japan Tuna Boat Owners' Association.) Pacific Oceanic Fishery Investigations, U. S. Fish and

Wildlife Service, Box 3830, Honolulu, Hawaii, May 7, 1956.

Young Tunas Found in Stomach Contents, by Hiroshi Yabe, Shoji Ueyanagi, Shoji Kikawa, and Hisaya Watanabe, 30 pp., illus., processed. (Translated from Report of the Nankai Regional Fisheries Research Laboratory, no. 8, March 1958, pp. 31-48 and 3 pages of plates.) U. S. Bureau of Commercial Fisheries, Hawaii Area Office, Box 3830, Honolulu, Hawaii, 1958.

THE FOLLOWING SERVICE PUBLICATIONS ARE FOR SALE AND ARE AVAILABLE ONLY FROM THE SUPERINTENDENT OF DOCUMENTS, WASHINGTON 25, D. C.

Decline of the Yellowtail Flounder (LIMANDA FERRUGINEA) Off New England, by William F. Royce, Raymond J. Buller, and Ernest D. Premetz, Fishery Bulletin 146 (from Fishery Bulletin of the Fish and Wildlife Service, vol. 59), pp. 169-267, illus., printed, 55 cents, 1959. The yellowtail flounder fishery off New England, which had risen to a place of importance with the increased food demands during World War II, was studied intensively from 1942 to 1949 to determine if changes in the yellowtail population were related to fishing pressure and whether regulation of the fishery was necessary to conserve the species. Tagging and other evidence indicated the existence of 5 stocks, the most important of which to United States fishermen occurred off southern New England. The landings from this stock declined from 63 million pounds in 1942 to 10 million pounds in 1949, but the population did not exhibit the usual symptoms of heavy fishing; a declining average size, an increasing proportion of young fish, or an increasing growth rate. Estimates of mortality and recruitment indicated that the fishery was drawing gradually on a reserve which for unknown reasons was not replenished by young. There is no clear evidence that greater total production could have been achieved by protecting fish at any size, in an area, or at any time of the year.

Grayling of Grebe Lake, Yellowstone National Park, Wyoming, by Thomas E. Kruse, Fishery Bulletin 149 (from Fishery Bulletin of the Fish and Wildlife Service, vol. 59), pp. 307-351, illus., printed, 35 cents, 1959.

Laws and Regulations for Protection of the Commercial Fisheries of Alaska, 1959, Regulatory Announcement 60, 33 pp. with 3-p. addendum, printed, March 1959, 25 cents. This publication is divided into two sections. One section contains laws for the protection of the commercial fisheries of Alaska and related information, including the authority for regulation, rules regarding oyster culture, Bristol Bay residence requirements, regulation of salmon escapement, fishing-gear restrictions, exceptions to weekly closed seasons, etc. The second section contains all the regulations governing the commercial fisheries in Alaska. These 1959 regulations supersede the regulations published in Regulatory Announcement 56 which became effective March 30, 1958. They have been revised, and as a result they contain many changes as well as the usual seasonal changes for 1959. The addendum, a reprint from the Federal Register of April 28, 1959, contains regulations for the restriction of salmon fishing in Bristol Bay.

Sexual Maturity and Spawning of Albacore in the Pacific Ocean, by Tamio Otsu and Richard N. Uchida, Fishery Bulletin 148 (from Fishery Bulletin of the Fish and Wildlife Service, vol. 59), pp. 287-305, illus., printed, 20 cents, 1959.

Some Uses of Statistical Analysis in Classifying Races of American Shad (ALOSA SAPIDISSIMA), by Donald R. Hill, Fishery Bulletin 147 (from Fishery Bulletin of the Fish and Wildlife Service, vol. 59), pp. 269-286, illus., printed, 20 cents, 1959.

MISCELLANEOUS PUBLICATIONS

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM. CORRESPONDENCE REGARDING PUBLICATIONS THAT FOLLOW SHOULD BE ADDRESSED TO THE RESPECTIVE ORGANIZATION OR PUBLISHER MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

ANGOLA:

Estudos de Biologia Maritima (Marine Biological Studies), Anais, vol. XII, tomo II, 1957, 157 pp., illus., printed in Portuguese. Junta das Missoes Geograficas e de Investigacoes do Ultramar, Rua da Junqueira, 86, Lisbon, Portugal. Describes the work of the Marine Biological Mission from Portugal to Angola.

ANIMAL FEEDING:

"The Use of Amino Acid Values in Formulation of Feeds," by H. S. Wilgus, article, Feedstuffs, vol. 30, December 20, 1958, p. 26, printed. Feedstuffs, Miller Publishing Co., 118 S. 6th St., Minneapolis 2, Minn.

ANTIBIOTICS:

"Antibiotic Now OK for Fish," article, Food Engineering, vol. 31, no. 5, May 1959, p. 41, illus., printed. Food Engineering, McGraw-Hill Publishing Co., Inc., 330 W. 42nd St., New York 36, N. Y. For more than 3 years antibiotics have been used as a dip for fish fillets in Canada. The U. S. Food and Drug Administration recently approved a petition by a chemical company for use of chlortetracycline at 5 parts per million on fresh fish, shucked scallops, and unpeeled shrimp. The approved process involves use of a dip or ice containing a solution of the antibiotic by commercial fishermen on fresh-caught, whole, headed, and gutted fish.

AUSTRALIA:

The Barramundi LATES CALCARIFER (Bloch) in Queensland Waters, by D. J. Dunstan, Technical Paper No. 5, 22 pp., illus., printed. Division of Fisheries and Oceanography, Commonwealth Scientific and Industrial Research Organization, Melbourne, Australia, 1959.

Measurements of Light Penetration in the Tasman Sea, 1955-57, by H. R. Jitts, Technical Paper No. 6, 26 pp., illus., printed. Division of Fisheries and Oceanography, Commonwealth

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Scientific and Industrial Research Organization, Melbourne, Australia, 1959.

Statistical Bulletin: Fishing and Whaling, Australia, no. 4, 1957-58, 18 pp., illus., processed. Commonwealth Bureau of Census and Statistics, Canberra, Australia. This is the fourth of a series of annual bulletins dealing with the fishing and whaling industries in Australia. The statistics, covering quantity and value of catch and related data, pertain to the year 1957/58 for fisheries and the 1958 season for whaling, with comparative data for the previous 4 years. The bulletin is divided into two parts--the first dealing with fisheries and the second with whaling. The part on fisheries is subdivided into a section on edible fishery products--finfish, crustaceans, and molluscs; and another on pearl and trochus shells.

BROOK TROUT:
The Eastern Brook Trout; Its Life History, Ecology, and Management, by John Brasch, James McFadden, and Stanley Kmiotek, Publication 226, 10 pp., illus., printed. Wisconsin Conservation Dept., Madison, Wis., 1958.

BYPRODUCTS:
"Fish Meal and Oil. 4--The Rate of Oxidation of Fat in Pilchard Presscake," by G. M. Dreosti and G. H. Stander, article, Annual Report, Fishing Industry Research Institute, April-December 1956, vol. 10, pp. 18-20, printed. Fishing Industry Research Institute, Cape Town, Union of South Africa.

CALIFORNIA:
The Sea Bottom off Santa Barbara, California: Biomass and Community Structure, by J. Laurens Barnard and Olga Hartman, 16 pp., illus., printed. (Reprinted from Pacific Naturalist, vol. 1, no. 6, June 1, 1959.) Beaudette Foundation for Biological Research, Box 482, R. F. D. 1, Solvang, Calif.

Statistical Report of Fresh, Canned, Cured and Manufactured Fishery Products, 1958, Circular No. 33, 16 pp., illus., printed. Department of Fish and Game, Biostatistical Section, Marine Resources Operations, Sacramento, Calif., 1959.

CANADA:
Eleventh Annual Report of the Pacific Marine Fisheries Commission for the Year 1958, 29 pp., printed. Pacific Marine Fisheries Commission, 340 State Office Building, 1400 S. W. Fifth Ave., Portland, Ore. Reports briefly the specific activities of the Pacific Marine Fisheries Commission during 1958 and presents a review of long-term developments in the fields of research, regulation, and coordination. Describes recent international developments affecting jurisdiction over fisheries. Presents sections on otter-trawl, California albacore, Pacific Coast shrimp, and offshore troll salmon fisheries.

Fisheries Statistics of Canada, 1957 (Prince Edward Island), 30 pp., illus., printed in French and English, 50 Canadian cents. Queen's Printer and Controller of Stationery, Ottawa, Canada, May 1959. Contains tables giving the quantity and value of fishery products landed in Prince Edward Island in 1939-1957, by species; quantity and value by species and fisheries districts; quantity and value of manufactured fishery products by species, 1956-57; capital equipment in the primary fisheries operations; and the number of fishermen engaged in the primary fisheries operations.

Results of Special Sport Fishing Surveys, 1957-1958 (Supplementary Report to the 1958 Annual Report to the 1958 Annual Report of Statistics on Salmon Sport Fishing in the Tidal Waters of British Columbia), 23 pp., illus., processed. Department of Fisheries, 1110 West Georgia St., Vancouver 5, B. C., Canada, May 15, 1959.

CHILE:
Cooperativas Pesqueras (Fishery Cooperatives), Boletin Nos. 1 and 2, January and February 1959, respectively, 4 pp. ea., illus., processed in Spanish. La Seccion Cooperativas, Depto. Fomento de Pesca y Caza, Valparaiso, Chile. The first two issues of a new monthly bulletin presenting news on fishery cooperatives sponsored by the Chilean Department of Fish and Wildlife. Covers the activities and benefits of the fishery cooperatives of Chile.

CLAMS:
The Bay Clams of Oregon (Their Identification, Relative Abundance, and General Distribution), by Lowell D. Marriage, Educational Bulletin No. 2, 28 pp., illus., printed. Fish Commission of Oregon, Portland, Ore., 1958. Presents a description of the various species of Oregon's bay clams, a guide to the general abundance and distribution of the major species, and description of the various bays where the clams are produced. Statistical data are also included showing Oregon's commercial clam production during 1928-56.

COD:
"Chemical Indices of Decomposition in Cod," by Fred Hillig, L. R. Shelton, Jr., J. H. Loughrey, and Jerome Eisner, article, Journal of the Association of Official Agricultural Chemists, vol. 41, November 1958, pp. 763-776, printed. Association of Official Agricultural Chemists, Inc., Box 540, Benjamin Franklin Station, Washington 4, D. C.

COMMON MARKET:
"Le Marché Commun, Vu par les Américains" (The Common Market, the American Point of View), article, France Pêche, vol. 40, no. 29, May 1959, pp. 15-16, printed in French. France Pêche, 84, Rue Carnot, Lorient, France.

CONTAINERS:
"Containers for Transporting Fresh Fish in Ice," by R. J. Nachenius, article, Annual Report, Fishing Industry Research Institute, 1957, vol. 11, p. 14, printed. Fishing Industry Research Institute, Cape Town, Union of South Africa, 1958.

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CROAKER:

Migration of the Croaker, MICROPOGON UNDULATUS, by Dexter S. Haven, No. 82, 6 pp., illus., printed. (Reprinted from Copeia, no. 1, April 17, 1959, pp. 25-30.) Virginia Fisheries Laboratory, Gloucester Point, Va.

CUBA:

Catalogo de Peces Cubanos (Catalogue of Cuban Fish), by Pedro Pablo Duarte-Bello, Monografia 6, March 1959, 204 pp., printed in Spanish with common names in English, $3.00. Universidad Catolica de Santo Tomas de Villanueva, Laboratorio de Biologia Marina, Apartado No. 6, Marianao, Cuba.

DELAWARE:

Marine Laboratories (Newark and Lewes, Delaware), Biennial Report, 1957-1958, no. 4, 16 pp., illus., printed. University of Delaware, Department of Biological Sciences, Newark, Del., 1959.

FISH MEAL:

"Determination of Fat in Fish Meal by Refractometry," by H. Treiber, article, Fette, Seifen, Anstrichmittel, vol. 60, 1958, pp. 488-490, printed. Deutsche Gesellschaft fur Fettwissenschaft, Industrieverlag von Herhaussen K. G., 24 Rodingsmarkt, Hamburg 11, Germany.

"Fish Meal. Investigation of Fat Content," by A. F. M. G. Luijpen, D. Hooghiemstra-Brasser, and A. C. Hindriks, article, Fette, Seifen, Anstrichmittel, vol. 60, 1958, p. 951, printed. Deutsche Gesellschaft fur Fettwissenschaft, Industrieverlag von Herhaussen K. G., 24 Rodingsmarkt, Hamburg 11, Germany.

FISH OILS:

"The Role of Free Fatty Acids on Antioxidant Effectiveness in Unsaturated Oils," by Harold S. Olcott, article, Journal of the American Oil Chemists' Society, vol. 35, November 1958, pp. 597-599, printed. American Oil Chemists Society, 35 E. Wacker Drive, Chicago 1, Ill.

FISH SOLUBLES:

"A Comparison of the Nutritive Value of Condensed Herring Solubles Prepared by Acid and Enzyme Treatments," by B. E. March, Jacob Biely, J. McBride, R. A. MacLeod, and D. R. Idler, article, Progress Reports of the Pacific Coast Stations, no. 111, August 1958, pp. 23-28, printed. Fisheries Research Board of Canada, Pacific Fisheries Experimental Station, 898 Richards St., Vancouver, B. C., Canada.

FISHERIES DEVELOPMENT:

Principles of Fisheries Development, by Casper Josephus Bottemann, 689 pp., illus., printed, $12. North-Holland Publishing Co., P. O. Box 103, Amsterdam, Netherlands, 1959. The aim of this textbook (in five parts) is to trace the principles which determine the structure of fisheries and to establish, on this basis, the principles governing fisheries development; as well as to find how the industry might contribute more fully to the world's food supply. Part 1 deals with the basic facts concerning fish populations. Part 2 covers the principles of fishing methods and units and use of resource. Part 3 on the main features of dynamic fisheries describes expansions in fisheries proper, role of complementary industries, and structural problems of fisheries. Part 4 dealing with the general principles of development discusses pattern of structure, development and leverage, climates for development, and development strategy. Part 5 on problems of development in fisheries discusses conditioning factors in development, basic leverage patterns, development of fishing units, methods and instrument of leverage, and strategy of leverage. The author points out that the book is confined to sea fisheries because those produce the most intricate problems. All phases of fisheries are covered, from the resource in the sea to the final product and its marketing. The book is a general philosophy on fisheries. A scholarly work of compelling interest for all those wishing to increase their knowledge of fishery science.

FOOD AND AGRICULTURE ORGANIZATION:

The Food and Agriculture Organization has published reports describing that Agency's activities under the Expanded Technical Assistance Program for developing the fisheries of many countries. These reports have not been published on a sales basis, but have been processed only for limited distribution to governments, libraries, and universities. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy.

Informe al Gobierno de Mexico sobre el Consumo y la Distribucion del Pescado en los Mercados (Report to the Government of Mexico on the Consumption and Distribution of Fish in the Markets), by John Fridthjof, FAO Report No. 694, 27 pp., processed in Spanish, May 1958. Reports on fish production in Mexico, dry fish and its cheap disposal, problems of distribution, necessity for special instruction to the consumer, national and local inquiries, fish work unit, application of the activities of the fish work unit, the idea of a puppet show, other activities of the adult education program, the program on a local level in the Federal District, States of Morelos, Michoacan, and Veracruz, and an evaluation of reported activities.

Report to the Government of Turkey on Fishery Biology, by Hermann Einarsson, FAO Report No. 829, 80 pp., illus., processed, May 1958. Discusses the background and research facilities; technical work accomplished--field work at sea and work in the laboratory; and conclusions regarding research services.

Informe al Gobierno de Mexico sobre Consumo y Distribucion del Pescado en los Mercados (Report to the Government of Mexico on Consumption and Distribution of Fish in the Markets), by John Fridthjof, FAO Report No. 843, 23 pp., illus., processed in Spanish, July 1958. Reports on a follow-up study to supplement FAO Report No. 694.

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Rapport au Gouvernement de la Tunisie sur la Situation de la Flotte Chalutiere Tunisienne (Report to the Government of Tunisia on the Situation of the Tunisian Trawler Fleet), by Peter Gurtner, FAO Report No. 864, 45 pp., illus., processed in French, July 1958. Describes the survey and evaluation by a swiss naval architect of the Tunisian trawler fleet. Discusses the vessels, motors, and gear of the fleet, method of fishing applied, personnel, the point of view of independent owners, facilities of the shipyards, and recommendations for long- and short-term programs.

Report to the Government of Saudi Arabia on Exploration and Commercial Fishing Operations in the Red Sea, by Gonzalo G. Ferrer, FAO Report No. 877, 30 pp., illus., processed, May 1958. Reports on the work done in 1954-56 along the Arabian Coast of the Red Sea. Discusses initial and later surveys of the fishing grounds, commercial fishing operations, the gear, and fishing methods used.

Report to the Government of Sudan on the Red Sea Fisheries (based on the work of Erling Oswald), FAO Report No. 934, 29 pp., illus., processed, August 1958. Describes the work accomplished in operations out of Port Sudan with a motor boat fitted for multiple trolling and the demonstrations to local fishermen of greatly increased earnings with modern fishing gear. Subsequently, a Red Sea Fishermen's Cooperative Society was formed.

Annotated Bibliography on Fishing Gear and Methods, Indo-Pacific Fisheries Council Special Publications No. 4, 85 pp., processed. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, 1958. Out of 3,000 bibliographic references on fishing gear, 672 titles have been selected and are presented with brief annotations giving an indication of the information contained in each publication or article. Also contains a list of the full names of the periodicals in which the references were published and the addresses of their publishers, including only those which are not already listed in the Handbook for World Fisheries Abstracts. The material appears on one side only of each page; the paper being of a heavy, stiff quality, making the bibliographies suitable for cutting out and inclusion in a card index.

Report of the F. A. O. Training Centre in Fishery Co-Operatives and Administration, vol. I, 46 pp., printed; vol. II (Fishermen's Co-Operatives in the Indo-Pacific Region), by Edward Szczepanik, 128 pp., printed. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, 1958. (For sale by International Documents Service, Columbia University Press, 2960 Broadway, New York 27, N. Y.) Describes in two volumes the work accomplished at the FAO Indo-Pacific Training Centre in Fishery Co-Operatives and Administration, held in Sydney, Australia, December 16, 1957, to January 25, 1958. The first volume presents a factual account of the organization, conduct, and training program of the Centre. Its primary purpose is to inform Governments concerning the work accomplished at the Centre. It also provides guidance as to the value of this type of regional project and the practical measures required in the preparation and execution of such a program of training. Some observations are offered on the advantages, from the standpoint of the participants, of certain training activities, especially practical work and discussions and on the importance of achieving group cohesion while allowing full opportunity for the study of the problems of individual participants.

The second volume consists of a review of fishermen's cooperatives in the Indo-Pacific region, based on reports and other documents prepared and assembled in connection with the Centre, and includes an analytical study of the role of cooperatives in relation to middlemen problems in the region generally. The main feature presented in this study is the remarkable postwar growth of the cooperative movement in the Indo-Pacific fisheries. This is the first comprehensive account of the cooperative movement in the Indo-Pacific fisheries as a whole and therefore presents the first opportunity for regionwide comparisons which can be most valuable in assessing the results and planning the future of the movement in particular countries. It also enables the reader to appreciate the past development, current problems, and future prospects of this important feature of the Indo-Pacific fisheries.

FRANCE:

Federation Nationale des Syndicats Francais de Conserveurs des Produits de la Mer (National Federation of French Syndicates of Canners of Marine Products), 8 pp., illus., printed in French. Federation Nationale des Syndicats Francais de Conserveurs des Produits de la Mer, Paris, France, 1959. Presents statistical tables on French production of canned fishery products during 1958.

"Le Pays et la Pêche Face au Marche Commun" (The Country and the Fishing Industry in the Face of the Common Market), by Jules Molard, article, France Pêche, vol. 4, no. 28, April 1959, pp 15-17, printed in French. France Peche, 84, Rue Carnot, Lorient, France. Discusses the objectives to be achieved in the fishing industry so that full advantage may be taken of the latest financial adjustments. Cites examples of equipment schemes which are not merely projects but which, on the contrary, have proven their efficiency when applied to operational units of diverse types.

"La Pêche a la Lumière en Méditerranée" (Fishing With Lights in the Mediterranean), by Robert Lenier, article, France Pêche, vol. 4, no. 28, April 1959, pp. 44-47, illus., printed in French. France Pêche, 84, Rue Carnot, Lorient, France.

FUR SEALS:

"Storied Seal-Hunt," article, Trade News, vol. 11, no. 10, April 1959, pp. 3-5, illus., processed.

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Trade News, Department of Fisheries, Ottawa, Canada. Describes the adventures of the 8 sealing ships from Newfoundland and Nova Scotia operating in the Gulf of St. Lawrence and off the east coast of Labrador. This colorful and lucrative trade has been operating in this area for nearly a century. Early reports give accounts of good catches. The Canadian ships are aided by seal spotting aircraft and by the assistance of a representative of the Arctic Unit, Fisheries Research Board of Canada.

GEAR:

"Fishing with the South African Pursed Lampara," by C. G. Du Plessis, article, World Fishing, vol. 7, March 1958, pp. 57-58, printed. John Trundell (Publishers), Ltd., St. Richard's House, Eversholt St., London, N. W. 1, England.

A Method of Determining the Depth of Midwater Trawl Nets, by William Edward Barraclough, Circular no. 48, 5 pp., illus., printed. Fisheries Research Board of Canada, Biological Station, Nanaimo, B. C., Canada, 1958.

"On the Relation Between the Length of Ground Rope of a Danish Seine and the Variation of its Gape," by Otohiko Suzuki, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 23, no. 9, 1958, pp. 514-517, printed. Japanese Society of Scientific Fisheries, c/o Tokyo University of Fisheries, Shiba-kaigandori 6-chome, Tokyo, Japan.

GENERAL:

"Studies on Fishes of the Family Ophidiidae. III--A New Species of Lepophidium from Barbados," by C. Richard Robins, article, Breviora, no. 104, April 13, 1959, 7 pp., illus., printed. Museum of Comparative Zoology, Cambridge, Mass. (Also Contribution No. 221 from The Marine Laboratory, University of Miami, Miami, Fla.)

GIZZARD SHAD:

Age and Growth of the Gizzard Shad (DOROSOMA LACEPEDI) (Sesueur), in Lake Newnan, Fla., by Frederick H. Berry, 14 pp., illus., printed. (Reprinted from Proceedings of the Eleventh Annual Conference, Southeastern Association of Game and Fish Commissioners, pp. 318-331.) Southeastern Association of Game and Fish Commissioners, P. O. Box 360, Columbia, S. C., 1958.

HERRING:

De Haringcampagne 1957-58 (The Herring Fishery, 1957-58), by Charles Gilis, no. 1, 1958, 31 pp., illus., printed in Flemish and French. Zeeweten-schappelijk Instituut, Romestraat, 30, Oostende, Belgium.

The Herring from the Fuglsetfjord--a Supplement to "The Østerbø Herring," by Thorolv Rasmussen, 8 pp., illus., printed. (Report on Norwegian Fishery and Marine Investigations, vol. XII, no. 2, 1958.) A. S. John Griegs Boktrykkeri, Bergen, Norway.

"Herring Migrations in the Passamaquoddy Region," by R. A. McKenzie and B. E. Skud, article, Journal of the Fisheries Research Board of Canada, vol. 15, no. 6, 1958, pp. 1329-1343, printed. Journal of the Fisheries Research Board of Canada, Queen's Printer and Controller of Stationery, Ottawa, Canada.

"Untersuchungen über die Deutsche 'Ölherings-fischerei' in der Nordsee im Jahre 1956" (Assessment of the German Oil Herring Fishery in the North Sea in 1956), by Heinrich Kuhl and Klaus Tiews, article, Berichte der Deutsche Wissenschaftlichen Kommission für Meeresforschung, Neue Folge, band XV, heft 1, December 1957, pp. 58-69, illus., printed in German with English summary. E. Schweizerbart'sche Verlagsbuchhandlung (Nagele u. Obermiller), Stuttgart, Germany.

HYDROGRAPHY:

Hydrography of the North-Western Approaches to the British Isles, by D. S. Tulloch and J. B. Tait, Scottish Home Department Marine Research No. 1, 1959, 32 pp., illus., printed, 10s. (about US$1.40). Her Majesty's Stationery Office, 13a Castle St., Edinburgh 2, Scotland.

Hydrography of Scottish Coastal Waters, by R. E. Craig, Scottish Home Department Marine Research No. 2, 1959, 30 pp., illus., printed, 10s. (about US$1.40). Her Majesty's Stationery Office, 13a Castle St., Edinburgh 2, Scotland.

INTERNATIONAL CONFERENCES:

Participation of the United States Government in International Conferences, July 1, 1957-June 30, 1958, Department of State Publication 6772, 286 pp., printed, 70 cents. Office of International Conferences, Department of State, Washington 25, D. C., May 1959. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) A reference guide to the official participation of the U. S. Government in multilateral international conferences and meetings of international organizations during the period July 1, 1957-June 30, 1958. For many of the conferences detailed data are presented on the composition of the U. S. delegation, principal officers, participation by other countries and organizations, and brief statements of the actions taken. Describes among others, the following conferences: United Nations Conference on the Law of the Sea (February 24-April 27, 1958), Geneva; Inter-American Tropical Tuna Commission, Tenth Annual Meeting (February 11-12, 1958), Panama; International North Pacific Fisheries Commission, Fourth Meeting (November 4-8, 1957), Vancouver, Committee on Biology and Research (October 28-November 4, 1957), Vancouver; International Commission for the Northwest Atlantic Fisheries, Eighth Annual Meeting (June 9-14, 1958), Halifax; International Fisheries Convention of 1946, Permanent Commission: Sixth Meeting (October 22-25, 1957), London; International Whaling Commission, Tenth Meeting (June 23-28, 1958), The Hague; North Pacific Fur Seal Commission, First Meeting (January 13-17, 1958), Washington, D. C.; General Agreement on Tariffs and Trade (GATT), Contracting Parties: Twelfth Session (October 17-Novem-

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Foyle Fisheries Commission, Seventh Annual Report (for the year ended September 30, 1958), Pr. 4958, 35 pp., illus., printed, 2s. (about 28 U. S. cents); Sixth Annual Report (for the year ended September 30, 1957), Pr. 4552, 35 pp., illus., printed, 2s. (about 28 U. S. cents); Fifth Annual Report (for the year ended September 30, 1956), Pr. 4057, 29 pp., illus., printed, 2s. (about 28 U. S. cents); and Fourth Annual Report (for the year ended September 30, 1955), Pr. 3467, 33 pp., illus., printed, 1s. (about 14 U. S. cents). The Foyle Fisheries Commission, The Courthouse, Lifford, Ireland. (For sale at the Government Publications Sale Office, G. P. O. Arcade, Dublin, Ireland.)

ISRAEL:
Bamidgeh (Bulletin of Fish Culture in Israel), vol. 10, no. 4, December 1958, 46 pp., illus., printed in English and Hebrew. Joint Agricultural Extension Centre, Division of Fisheries, Ministry of Agriculture, Tel Aviv, Israel. Contains the following articles: "The Fish Culture Research Station--Dor," by A. Yashouv; "Acclimatization of New Species in the Fishponds of the Station," by A. Yashouv; "Winter Culture of Carps at the Fish Culture Research Station--Dor," by A. Yashouv, and "The Excreta of Carp as a Growth Limiting Factor," by A. Yashouv.

MACKEREL:
"Changes of Fat in Frozen Mackerel During Storage," by O. M. Mel'nikova and N. M. Khalina, article, Izvestiia Tikhookeanskovo Nauchno-Issledovatelskovo Instituta Rybnovo Khoziaistva i Okeanografii, vol. 42, 1954, pp. 299-302, printed. Izvestiia Tikhookeanskovo Nauchno-Issledovatelskovo Instituta Rybnovo Khoziaistva i Okeanografii, Vladivostok, U. S. S. R.

MENHADEN:
Length, Weight, and Age Composition of the Menhaden Catch in Virginia Waters, by J. L. McHugh, R. T. Oglesby, and A. L. Pacheco, No. 84, 18 pp., illus., printed. (Reprinted from Limnology and Oceanography, vol. 4, no. 2, April 1959, pp. 145-162.) Virginia Fisheries Laboratory, Gloucester Point, Va.

OYSTERS:
Cooling Rates of Fresh Oysters, Central Laboratory Report, 11 pp., illus., processed, limited distribution. U. S. Department of Health, Education, and Welfare, Public Health Service, Bureau of State Services, Division of Sanitary Engineering Services, Milk and Food Branch, Shellfish Section, Washington 25, D. C.

"La Pêche et l'Ostréiculture dans le Quartier de Bordeaux en 1958" (The Fishery and Oyster Culture in the Bordeaux Area in 1958), by M. Lucas, article, France Pêche, vol. 40, no. 29, May 1959, pp. 37-38, printed in French. France Pêche, 84, Rue Carnot, Lorient, France.

PARASITES:
Concerning the Specificity of Fish Parasites, by S. S. Shulman, Fisheries Research Board of Canada, Translation Series, No. 177, 17 pp., processed. (Translated from Zoologicheskii Zhurnal, vol. 33, no. 1, 1954, pp. 14-25.) Fisheries Research Board of Canada, Biological Station, Nanaimo, B. C., Canada, 1958.

PILCHARD:
The Pilchard of South Africa and of South West Africa (SARDINOPS OCELLATA)--The Variations of Temperature in the Surface Layer of the Sea Near Walvis Bay during 1954-57, with an Analysis of Some Wind Data from Pelican Point, by G. H. Stander, Investigational Report No. 35, 40 pp., illus., printed. South African Department of Commerce and Industries, Division of Fisheries, Cape Town, Union of South Africa, 1958.

PORTUGAL:
Gremio dos Armadores Navios da Pesca do Bacalhau, Relatorio e Contas do Exercicio de 1958 e Orcamento para 1959 (Cod Fishing Vessel Owners' Guild, Statement of Operations for 1958 and Budget for 1959), 38 pp., illus., printed in Portuguese. A Comissao Revisora de Contas, Lisbon, Portugal, February 1959.

PRECOOKED FOODS:
A Study of Frozen Precooked Foods: Their Sanitary Quality and Microbiological Standards for Control, by A. E. Abrahamson, Leon Buchbinder, John Guenkel, and Milton Heller, 10 pp., illus., printed. (Reprinted from Association of Food & Drug Officials of the United States, vol. 23, no. 2, April 1959, pp. 63-72.) Department of Health, City of New York, Bureau of Food and Bureau of Laboratories, New York, N. Y. In the City of New York a microbiological study was made of 195 samples of frozen precooked foods of nationally known brands, obtained at the retail level. At this level about 76 percent were found to meet the Department of Health criteria of less than 100,000 colonies per gram and no Staphylococcus aureus. This is not a local problem but one of national scope. The standards used in the recent New York City study are recommended for adoption as a starting point for the improvement of the sanitary quality of frozen precooked foods of the types encompassed by the study. Unless Federal microbiological standards for frozen precooked foods are soon established there is a great likelihood that various and varying levels of standards will be adopted by local and state agencies which may be of some help to the consumer but may not make it easier for the processor.

PRESERVATION:
"Use of Ascorbic Acid for Fish Preservation (Analytical Determination)," by Maria Carusi Di Fabio, article, Progresso Veterinario, vol. 11, 1956, pp. 876-880, printed in Italian. Associazione Nazionale Veterinari Italiani, Turin, Italy.

QUALITY:
"A Review of the Value of Volatile Reducing Substances for the Chemical Assessment of the

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

Freshness of Fish and Fish Products," by Lionel Farber and Peter A. Lerke, article, Food Technology, vol. 12, December 1958, pp. 677-680, printed. Food Technology, The Garrard Press, 510 No. Hickory, Champaign, Ill.

"Studies on Protein Denaturation in Frozen Fish" (Parts I, II, and III), by J. I. M. Ironsides and R. M. Love, article, Journal of the Science of Food and Agriculture, vol. 9, September 1958, pp. 597-617, printed. Society of Chemical Industry, 14 Belgrave Square, London, S. W. 1, England.

RECIPES:

Fish for Hospital Catering, 30 pp., illus., printed. White Fish Authority, Lincoln's Inn Chambers, 2-3 Cursitor St., London, E. C. 4, England, 1959. An eye-catching booklet, illustrated with color photos, which contains sections on the therapeutic value of fish, a table of food values of white fish, choosing fish for normal and special diets, buying fish, preparation and storage of fish, sanitation, cooking, serving and garnishing, keeping fish hot, fish recipes for normal diets, and fish for special diets.

Fish for Industrial Catering, 46 pp., illus., printed. White Fish Authority, Lincoln's Inn Chambers, 2-3 Cursitor St., London E. C. 4, England, 1959. This useful booklet discusses fish and the problems of service, how to choose fish, sanitation, basic cooking methods for the canteen, and some useful tips when cooking fish. It also presents recipes for large quantity cookery for the canteen and cafeteria, the snack bar, the directors' dining room; preparation of shellfish; and sauces for fish.

Fish for School Meals, 24 pp., illus., printed. The White Fish Authority, Lincoln's Inn Chambers, 2-3 Cursitor St., London E. C. 4, England, 1959. Making fish popular with children is worthwhile since it can bring welcome variety to the school menu. That is the aim of this booklet which discusses choosing and buying fish, controlling delivery, quality and freshness, storage, preparation, sanitation, choice of fish, cooking fish, frying, other cooking methods, serving fish to children, and useful hints. It also contains recipes for the preparation of fish and sauces, and tips for transporting hot prepared fish dishes.

Four Recipe Leaflets, 4 pp. each, illus., printed. White Fish Authority, Lincoln's Inn Chambers, 2-3 Cursitor St., London, E. C. 4, England. Contain recipes for the preparation of fish dishes. Titles of the leaflets are: "Have a Proper Meal with Fish;" "Sensible Slimming with Fish;" "Fish for Invalids;" and "Party Dishes with Fish."

SALMON:

Causes of the Fluctuations in Abundance of Sockeye Salmon in Kamchatka, by F. V. Krogius, Fisheries Research Board of Canada, Translation Series, No. 92, 5 pp., illus., processed. (Translated from Trudy Problemnikh i Tematicheskikh Soveshchanii Zin, no. 6, 1956, pp. 144-149.) Fisheries Research Board of Canada, Biological Station, Nanaimo, B. C., Canada, 1957.

Concerning the Causes of a Peculiarity of the Pink Salmon of the Sea of Japan, by I. B. Birman, Fisheries Research Board of Canada, Translation Series, No. 142, 6 pp., illus., processed. (Translated from Zoologicheskii Zhurnal, vol. 35, no. 11, 1956, pp. 1681-1684.) Fisheries Research Board of Canada, Biological Station, Nanaimo, B. C., Canada, 1958.

Fisheries (Contributions of Western States, Alaska, and British Columbia to Salmon Fisheries of the North American Pacific Ocean, including Puget Sound, Straits of Juan de Fuca and Columbia River), volume 2, 80 pp., illus., printed. Washington Department of Fisheries, Seattle, Wash., 1959. Contains chapters on: the need for cooperative management and preservation of historic fishing rights; historical review of fisheries management; problems involved in management of Pacific fisheries; Canadian proposal for a 12-mile zone of territorial waters; interception of migrating fish; the problem of the Bonilla-Tatoosh Line; extension of treaty waters to include Johnstone Strait and Puget Sound; chinook, silver, sockeye, pink, and chum salmon; objectives of fish farming; fish protective investments in Washington, Oregon, Idaho, and California; calculated minimum contributions of hatchery releases to the catch of salmon on the Pacific Coast and costs Assessable to Hatchery Operations; and conclusions and recommendations. Also presents graphs and charts depicting salmon migrations and landings, as well as tables showing investments in hatcheries and production of salmon from liberations of hatchery-reared fish, among others.

Results of a Study of the Biology of Sockeye Salmon, the Conditions of the Stocks and the Fluctuations in Numbers in Kamchatka Waters, by F. V. Krogius and E. M. Krokhin, Fisheries Research Board of Canada, Translation Series, No. 176, 21 pp., illus., processed. (Translated from Voprosy Ikhtiologii, no. 7, 1956, pp. 3-20.) Fisheries Research Board of Canada, Biological Station, Nanaimo, B. C., Canada, 1958.

Statistics on Salmon Sport Fishing in the Tidal Waters of British Columbia, 1958, 25 pp., illus., processed. Department of Fisheries of Canada, Pacific Area, 1110 West Georgia St., Vancouver 5, B. C., Canada, May 15, 1959.

"Variations in Composition of Southeastern Alaska Pink Salmon," by Claude E. Thurston, article, Food Research, vol. 23, November-December 1958, pp. 619-625, printed. Department of Food Technology, University of California, Davis, Calif.

SARDINES:

Behavior and Reactions of the Pacific Sardine, SARDINOPS CAERULEA (Girard), Under the Influence of White and Colored Lights and Darkness, by Anatole S. Loukashkin and Norman Grant, 50 pp., illus., printed. (Reprinted from

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

Proceedings of the California Academy of Sciences, vol. 29, no. 15, May 29, 1959, pp. 509-548.) California Academy of Sciences, San Francisco, Calif. This investigation was conducted in order to study experimentally the effects of various types of illumination on the Pacific sardine from the point of view of the behavior of the school as a unit and the ability of the fish to discriminate different colors of light. Out of the three colored lights--green, blue, and red--of both different and uniform light intensities, only the red light elicited what are called negative reactions. The experiments revealed three important factors in sardine reactions to the light and darkness: (1) the sardine is a phototactic animal; (2) the sardine is incapable of reacting differently to different intensities of the white light ranging from 0.01 to 38.9 foot-candles; (3) and the sardine is capable of discriminating qualitatively the colors of light of the three primary colors.

SCOTLAND:

Ninth Annual Report of the Supervisory Committee for Brown Trout Research, 1956-1957, Scottish Home Department Freshwater and Salmon Fisheries Research, No. 21, 14 pp., illus., printed, 4s. 6d. (about 63 U. S. cents). Her Majesty's Stationery Office, 13a Castle St., Edinburgh 2, Scotland.

Scottish Fisheries Bulletin, No. 11, May 1959, 20 pp., illus., printed. Fisheries Division, Scottish Home Department, Edinburgh, Scotland. Contains, among others, the following articles: "Scottish Herring Fishery Forecast for 1959," by B. B. Parrish; "A New Fisheries Convention," by C. E. Lucas; "The Importance of Plankton in Maintaining Fish Stocks," by J. H. Fraser; "Deadly Plant Found in the Sea," by J. H. Fraser; "The Cod's 'Poor Relations'," by J. Mason; "Fluctuations in the North Sea Haddock Stocks--II," by R. Jones; and "The Greenland Shark," by Bennet B. Rae.

Tenth Annual Report of the Supervisory Committee for Brown Trout Research 1957-1958, Scottish Home Department Freshwater and Salmon Fisheries Research No. 23, 15 pp., illus., printed, 4s. 6d. (about 63 U. S. cents). Her Majesty's Stationery Office, 13a Castle St., Edinburgh 2, Scotland.

SPAIN:

Investigacion Pesquera, vol. XII, October 1958, 134 pp., illus., printed in Spanish with English summaries. Instituto de Investigaciones Pesqueras, Universidad de Barcelona, Barcelona, Spain. Contains, among others, the following articles: "Fluctuaciones en la Pesqueria de Sardina de Castellon" (Fluctuations in the Sardine Fishery of Castellon), by M. G. Larraneta, P. Suau, and J. Lopez; "Capturas por Unidad de Esfuerzo en la Pesqueria de Sardina de Castellon" (Landings Per Unit of Effort in the Sardine Fishery of Castellon), by M. G. Larraneta, J. Lopez, and P. Suau; and "Estudio Biometrico Comparado de los Nodulos Insulinicos del Atun y la Albacora" (Comparative Biometric Study of the Insulin Nodules of Tuna and Albacore), by E. Balcells R. and Jose Planas Mestres.

Investigacion Pesquera, vol. XIII, November 1958, 133 pp., illus., printed in Spanish with English summaries. Instituto de Investigaciones Pesqueras, Universidad de Barcelona, Spain. Contains, among others, the following articles: "Estudio Comparativo del Crecimiento de las Sardinas, Sardina pilchardus Walbaum, de Barbate (Costa Sudatlantica Espanola) y Larache (Costa Atlantica de Marruecos)" (Comparative Study of Growth of the Sardine, Sardina pilchardus Walbaum, of Barbate (South Atlantic Spanish Coast) and Larache (Atlantic Moroccan Coast), by Julio Rodriquez-Roda; "Los Escombriformes Espanoles como Fuente de Insulina" (Spanish Trash Fish as a Source of Insulin), by Jose Planas Mestres and E. Balcells R.; and "Sobre el Poder de Pesca, Vulnerabilidad y Agregacion en la Pesqueria de Sardinas de Castellon" (On Fishing Power, Vulnerability and Concentrations in the Sardine Fishery of Castellon), by M. G. Larraneta.

SPONGES:

Natural History of the Marine Sponges of Southern New England, by Willard D. Hartman, Bulletin 12, 179 pp., illus., printed. Peabody Museum of Natural History, Yale University, New Haven, Conn., 1958.

ST. LAWRENCE SEAWAY:

"Impact of St. Lawrence Seaway on U. S. Foreign Trade and Shipping," by Ernst A. Van Es, article, Foreign Commerce Weekly, vol. 61, no. 21, May 25, 1959, pp. 24-26, 32, printed, single copy 15 cents. Bureau of Foreign Commerce, U. S. Department of Commerce, Washington 25, D. C. (For sale by the Superintendent of Documents, Washington 25, D. C.) With the inauguration of the St. Lawrence Seaway System on April 25, 1959, a new and important trade route has been opened to the merchant fleets of the world, reaching 2,400 miles inland from the Atlantic Ocean to the midcontinental industrial centers of the United States. The basic contribution of the Seaway to the development of foreign trade is the fact that it is now possible for most oceangoing vessels with a cargo-carrying capacity of 8,500 to 10,000 tons (compared with a maximum carrying capacity of less than 3,000 tons prior to deepening the channel to 27 feet) to load and discharge directly at all of the Great Lakes ports which provide adequate berthing facilities. The increased vessel capacity will be an important factor in the expansion of foreign trade, as it will increase the operating efficiency of shipping on the Seaway with a consequent reduction in ship operating costs.

TRAWLING:

Trawlfishing in the South-Eastern Caribbean (a report prepared for the Government of Trinidad and Tobago and the Caribbean Commission), 153 pp., illus., printed. Central Secretariat, Caribbean Commission, Port-of-Spain, Trinidad, 1955.

TRAWLS:

On the Choice of a Rational Shape for Trawl-Boards, by I. R. Matrosov, 9 pp., processed. (Translated from Rybnove Khozyaistvo, no. 1, January 1958, pp. 36-42.) Ministry of Agriculture, Fisheries and Food, Fisheries Laboratory, Lowestoft, England, 1958.

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TUNA:

The Albacore Tuna Fishery of Oregon, by Irving W. Jones, Educational Bulletin No. 3, 11 pp., illus., processed. Fish Commission of Oregon, Portland, Ore., 1958. Presents descriptions of the history of the albacore tuna fishery off the Oregon coast, fishing methods, canning methods, and biology and research. Surprisingly, the Commercial albacore tuna fishery was not discovered until 1936, when 40,000 pounds were landed. "Before 1936," according to the author, "albacore had occasionally been taken by trollers fishing for salmon, but the fishermen in some cases threw them away as being some sort of unknown and probably worthless scrapfish. The credit for discovery of the fishery can be given in part to pilchard fishermen fishing in waters off the Oregon and Washington coast." Oregon landings continued to increase until 1944, when a peak catch of 22.5 million pounds was landed. In the succeeding 10 years, landings declined, but later began to show an increase.

"Éléments Nouveaux sur la Migration des Thons" (New Ideas on the Migration of Tunas), by Robert Lenier, article, France Pêche, vol. 40, no. 29, May 1959, pp. 26-34, illus., printed in French. France Pêche, 84, Rue Carnot, Lorient, France.

UNITED KINGDOM:

Fish from the Sea to the Table, 12 pp., illus., printed. White Fish Authority, Lincoln's Inn Chambers, 2-3 Cursitor St., London E. C. 4, England, 1959. A color-illustrated booklet principally for school children but so attractively presented as to be of general interest. Describes the different kinds of fish; how they are caught, landed, unloaded at port, and marketed; and how they are processed and quick-frozen. Also contains a map which shows where most of the edible fish are caught and how far the trawlers must go to seek their catches.

Fisheries of Scotland Report for 1958, 80 pp., illus., printed, 4s. 6d. (about 63 U. S. cents). Her Majesty's Stationery Office, 13a Castle St., Edinburgh 2, Scotland, April 1959. This report discusses the changes which took place in the Scottish fishing fleet during 1958 as well as details of the catch. It also includes in the appendices reports on fisheries research and harbors. New fishing vessels of various types are making their appearance in the Scottish fleet each year and the modernization of their vessels by trawler owners continued last year at an even pace. A number of tables are included in the report which deal with quantities and values of fish landed, number of vessels and fishermen engaged in the fisheries, and grants and loans for the purchase of boats and gear. The Marine Laboratory at Aberdeen continued its investigations of herring, demersal, and shellfish fisheries. Research on salmon and brown trout has progressed at the Freshwater Fisheries Laboratory at Pitlochry. The program has included experiments in the protection of salmon nets from attacks by seals.

List of Recommended Names for the Sale of Fresh or Frozen Fish by Retail, 6 pp., printed. White Fish Authority, Lincoln's Inn Chambers, 2-3 Cursitor St., London E. C. 4, England, January 1959. The White Fish Authority, in consultation with the Local Authority Associations and the fishing industry, has prepared a Code of Practice indicating prescribed names under which fish should be sold in the retail markets. This information is presented in the form of a chart giving the names by which fish should be sold retail, other names by which fish are at present known, and scientific names of species.

U. S. S. R.:

"New Fishing Areas and New Fishes for the Industry in Far-Eastern Seas," by Theodor S. Rass, article, Voprosi Ikhtiologiim, vol. 4, 1955, pp. 71-81, processed. (Institute of Oceanology of the Academy of Sciences of the U. S. S. R.) A translation has been made by the Department of the Secretary of State of Canada, Foreign Language Division, Ottawa, Canada, 1957.

WHALING:

International Whaling Statistics, no. XXXIX, 72 pp., illus., printed, kr. 2.00 (about 28 U. S. cents). The Committee for Whaling Statistics, Oslo, Norway, 1958.

International Whaling Statistics, no. XXXX, 53 pp., illus., printed, kr. 2.00 (about 28 U. S. cents). The Committee for Whaling Statistics, Oslo, Norway, 1958.

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NATIONAL FISH 'n' SEA FOOD PARADE--OCTOBER 19-25, 1959

The Fishing Industry and the U. S. Department of the Interior's Bureau of Commercial Fisheries are working together to encourage the increased use of fish and shellfish products during the "Fish 'n' Sea Food Parade"--October 19-25, 1959. A great deal of interest has been generated in this fall promotion, according to preliminary reports.

This is the Fishing Industry's fifth annual all-out promotion channeled over radio, television, newspaper, magazines, and other media. The many advantages of serving fish are being stressed. All types of fresh, frozen, canned, smoked, precooked, and cured fishery products and fish dinners are being advertised. Many retail stores and restaurants are making a concerted effort to display, stock, and promote fishery products during this year's "Fish 'n' Sea Food Parade."

Display material is available for retail food stores and restaurants, consisting of window posters, diecut paper posters, mobiles, and menu tents. Mayors and governors will be urged to issue "Fish 'n' Seafood Parade" proclamations.

Bureau of Commercial Fisheries field men are helping to obtain newspaper publicity and are distributing recordings for

radio stations, and also television slides and shorts. A special marketing bulletin has been distributed to food editors and home economists. Fact sheets with recipes have been released to restaurants, institutions, and schools. In addition, Bureau of Commercial Fisheries field men and home economists are available for appearances on radio and television.